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CONTENTS.

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VOL. II. NOVEMBER, 1914. PART 5.

Agriculture.

COTTON-GROWING AMONGST PRICKLY PEAR.

There are many large areas of rich land which have been overrun by the prickly-pear, but not to such an extent as to cover the entire surface of the soil; and there are a considerable number of vacant spaces unoccupied by the pear which afford opportunities of raising a crop which does not demand the use of the plough. Such a crop is cotton. Mr. W. Neil, late of Dulacca, made some experiments with this crop amongst the pear on the Western Line last year, and the results obtained were sufficiently satisfactory to lead to the belief that with very little trouble a good crop of cotton can be raised without any other appliance than the primitive hoe. The pear in the West thrives on some of the richest soils; and where it has not taken as yet full possession, there are vacant spaces from 2 to 3 ft. in diameter on which a cotton crop can be raised. In 1906 Mr. Neil sowed Sea Island cotton on a number of the aforesaid patches, by simply making a hole with a mattock 1½ in. deep. This was done on the 20th September. No cultivation was attempted. The plants grew to a height of over 4 ft., and produced two or three fine bolls on each branch, the bolls averaging 1½ to 2½ in. in length before opening. The cotton, which was of excellent quality, was picked on the 14th February. The only rain the plants received was from a thunderstorm in October. The cotton was picked by members of his family usually on moonlight nights, and was sold to Messrs. Joyce Bros. at 2½d. per lb. in the seed. Mr. Neil considers that on any pear land, not too overgrown, in the country between Chinchilla and Dulacca, cotton can be raised economically and profitably.

CLEARING LAND BY POISONING TREES.

We have frequently described the method of destroying trees by "frill" ringing and poisoning. Here is a proof of the simplicity and effectiveness of this method of getting rid of small and heavy timber, as described in the Melbourne "Leader":—

Mr. D. Morris, of Bethungra Park, Illabo, N.S.W., had 2,000 acres of heavily timbered land, which he proposed to put under wheat. Under the old methods of ringing and allowing the timber to die before being grubbed out, a period of from two to three years would elapse before the land was fit for agriculture. Mr. Morris adopted arsenical poisoning, which he had previously satisfied himself was satisfactory.

A paddock containing 320 acres was closed; 1 lb. of arsenic and 7 lb. of soda were mixed to 4 gallons of water. The mixture was allowed to simmer over a slow fire for a few hours, special care being taken to prevent the water coming to a boil. Drums were then filled with the mixture, and put by for use as required. No special appliances are required for applying the poison. An oil drum fitted to a pair of wheels and a watering can is all that is necessary. A man was put to "frill" ring the timber, and after treating a dozen or more trees he took a quantity of the prepared mixture and poured it slowly into the ring, going from one tree to another with the can. In frill-ringing it is necessary to give the axe a half turn downward, so as to split the bark, and thus enable the mixture to find an easy entrance to the sap veins. The paddock having been treated as above, the stock was put back into it, it having been proved that there was no danger of stock being poisoned through eating the falling leaves.

A few days after treatment the timber has the appearance of having been rung for several months, and in about four months the timber is dead and ready to pull down. Unlike timber which has been allowed three or four years to die, the trees treated with arsenic remain sound, and are much better to pull down and use either for fencing or firewood. The paddock above described was under heavy timber, and four months later a contract was let for clearing, and the ploughs followed the clearing gang, the land being fallowed for the following season. The two valuable features of arsenical poisoning are that two years are saved in preparing the land for agriculture, and there is practically no suckering, the poisoning killing the tree down into the roots. Mr. Morris is now engaged treating other large areas of green country, and is so satisfied with the method that he has no intention of going back to the old system. Mr. Morris states that the greatest care is necessary in preparing the mixture, which must not be allowed to boil. In reply to a correspondent who asked for further particulars, Mr. Morris wrote:—"My experiments have been with small saplings up to trees over 2 ft. in diameter. I ring the bark as low to the ground as possible, and then pour the liquor around the frill ring slowly, so as to let it soak down the bark. For weeds to very small shrubs you would require a spray. There is a mixture on the market called arsenate of soda, which I am told does for the purpose, but I have not had any experience of it. One pint of the mixture will

kill a tree 2 ft. in diameter. The arsenic and soda as I use it is very strong, and would be very poisonous—that is, if you sprayed it on weeds —and would kill anything eating any of the leaves or brush. My system of bark-ringing is different, as it mixes with the sap of the tree, which is its blood. It kills the tree through the sap.''

SCARCITY OF POTASH.

The greatest potash supply of the world is found at Stassfurt, Germany, where soluble potash salts are mined in large quantities. Now that, owing to the European war, this source of supply is cut off, farmers, fruitgrowers, and others will be at a loss how to obtain the necessary fertiliser. Muriate of potash is the cheapest form of potash, and is usually a good source, except in special cases where chlorine may injure the quality of the crops, such as tobacco and oranges. For such crops, sulphate of potash or sulphate of potash magnesia should be used. Kainit is another form of potash salt containing chlorine, and is especially valuable upon sand soils. Kainit is valued not only for its fertilising properties, but for its power of destroying insect life and curing plant diseases.

Wood ashes are also a valuable source of potash, but the amount of potash contained in them is small and variable. All vegetable matter on the farm—such as wood, weeds, woody shrubs such as lantana, &c.—should be utilised for the purpose of obtaining potash. Plants cannot grow without it, and we have been asked if salt or soda could supply its place. One fact has been clearly demonstrated by scientific research in plant life:—'' Soda cannot take the place of potash as a plant food, neither can salt.'' Plants are indifferent to the presence of soda. They can prosper when soda is entirely absent, but no amount of soda will produce growth when potash is wanting.

It should be noted that 1,000 lb. of corn stalks will yield 17·5 lb. of potash; bean or sunflower stalks, 20 lb.; grape vine cuttings, 40 lb. Tobacco stems contain 5 per cent to 6 per cent., and some midribs of tobacco leaves as much as 8 per cent. We have seen vineyards in Switzerland manured with chopped vine cuttings.

Now, as far as salt is concerned, Storer says:—Of sodium compounds considered as fertilising agents, comparatively little need be said. Methodical experiments have shown that sodium is apparently not essential to the life of agricultural crops. Crops can grow perfectly well without it; or, at the most, they need so small a trace of soda that enough can always be obtained from the supplies found in the soil, or even in the air. The soda usually found in the ashes of plants is accidental and non-essential. The old notion that soda could replace potash in the plant has been disproved; yet common salt is often found to do good service as manure. The explanation of this fact seems to be that salt acts indirectly. It effects the decomposition of substances already in the soil, and sets free from them some things which are needed by plants. It is now

known that, with many soils, potash can be given to the crops by applying common salt or any other soluble sodium compound to the land, the action being that the salt pushes out lime and potash from the surface soil, sending them down to where the roots of the crops are growing. Still, after all, it would be usually better policy to apply a potash compound directly, rather than to count upon the indirect action of salt (chloride of sodium) or of any other sodium compound.

As has been shown, common salt is not in itself a fertiliser, but some plants—such as asparagus, mangolds, beet, and potatoes—benefit directly from its application. Mangolds particularly thrive on salty or alkali soil. This was very marked on one of the State Farms—the Hermitage, near Warwick, where, some years ago, there were several alkali patches on which neither wheat nor millets would thrive. Then mangolds were tried, and these came to perfection, absorbing large quantities of salt. It is said that their roots will take up as much as 90 lb. of salt per acre. But, even so, experiments at Rothamsted have pretty well proved that the increased crop after a dressing of salt is not due to the inherent liking of mangolds for this substance, but to their dependence on abundant supplies of potash, because, as above stated, the soluble salt will bring into solution the reserves of insoluble potash in the soil and manure.

It was reported some months ago that a German firm was constructing a factory at Haffradie, in the neighbourhood of Reykjavik, the capital of Iceland, for the manufacture of a new fertilising material with potassium as its chief component. The raw material consists of a kind of potassium felspar, resembling lava. This will be reduced in electrical furnaces together with coal and iron. The products of these furnaces are of two kinds—viz., a silicious iron, which is saleable to steel works, and a potassium slag, which is first subjected to a crushing process, and then brought into the market under the name of "elektro-kalium," as a manure. The process was invented by a Swedish engineer, Mr. Alex. Lindblad, who has a factory of his own in Sweden—viz., the Sansta Electrical Melting Works, at the Hagge Station. Elektro-kalium is not to be confused with the material that has been brought into the market in Germany under the name of "feldspar flour," which is merely crushed feldspar.

Whether the present war will put a stop to this enterprise or not remains to be seen. Iceland belongs to Denmark; and as Denmark is a neutral State, it is probable that the work will be continued, and that, after the war, the product, which it is said will be remarkably cheap, owing to its being produced by electric power, will be placed on the market. Potash manures for orchardists are indispensable, and must be had from some source.

BOY AND GIRL CORNGROWERS IN THE UNITED STATES OF AMERICA.

The Editorial Bureau, Panama-Pacific International Exposition, writes:—

Nine thousand young Burbanks of the cornfields—boy and girl delegates to the Convention of the National Top-Notch Farmers' Club—are

expected to visit the Panama-Pacific International Exposition in a body in 1915. These delegates will represent every great corn-producing county in thirty-three States of the Union, three representatives being chosen from each county by the governor of each State.

Each of the 9,000 delegates to the greatest exposition ever held in the world has earned the honour by producing a record-breaking acre of corn, the greatest food material in the world, running upwards of 100 bushels to the acre. Each will bring with him his unique credentials in the shape of 10 ears of his prize corn to place on exhibition, in competition with the world. If laid side by side, these ears would extend for a distance of 4 miles—enough to put a golden girdle around the outside wall of the entire exposition grounds.

No one is eligible to membership in the Top-Notch Club who has not produced over 100 bushels of corn to the acre; and when it is remembered that 50 to 70 bushels formerly were regarded as a maximum, the great work which these young promoters of intensive cultivation are doing to educate their parents may be appreciated. The president of the club is the boy who holds the highest record. This year it was W. I. Dunson, of Alexander City, Alabama, who earned his office by producing over 232 bushels on an acre, and he will hold the office until such time as someone, by better methods of selection of seed and cultivation, takes from him both the record and the office. This is the merit system, plus.

Each corn-growing State is entitled to a vice-president, provided that someone in the State gets over into the 100-bushels to the acre class. So far, 33 States have qualified. Consequently, thirty-three young fellows have acquired the offices of vice-president through their own efforts—pull and the support of friends being at a discount. Each of these farmer-officials holds the record in his State. As will be seen, the Southern boys rather put it over their fellows in the Northern corn belt. Some of these vice-presidential top-notchers have exceeded 150 bushels per acre. They represent the following States:—Mississippi, 214·9 bushels per acre; Oregon, 192·1; North Carolina, 190·4; Georgia, 181·7; Michigan, 175; Arkansas, 172·6; Florida, 170·2; Texas, 167·5; Virginia, 167; Tennessee, 163·5; Utah, 156 bushels per acre.

While Alabama has won the presidency by scoring the largest yield, Illinois scored the greatest number of individual records, 214 young corn-growers in that commonwealth having qualified for membership. Singularly enough, Mississippi, which won the second highest score, also has the second largest number of top-notch growers, with 80 farmers who have qualified.

These delegates will number 9,000. In addition, a large number of members of their families and other progressive farm boys and girls—for many of these experts are girls—will join the army of productive soil-tillers at the exposition. Each of these delegates will assemble an exhibit of the best of his 1914 corn at the State Fair in his State, in competition with the displays of others. Each will bring with him to

San Francisco an exhibit of at least 10 ears of this prize product. At the Convention papers will be read and addresses delivered by the boys and by many agricultural experts from all over the world.

There are something like 5,000,000 of our population engaged directly in the production of corn, while about half the people of the United States are interested more or less in the production and betterment of this greatest of our farm crops, the other half being consumers. For these reasons the meeting of this army of young experts is regarded as of immense importance as a means of solving one of the most difficult problems of industrial economy—the problem of making the food supply keep pace with the increase of population, as well as of demonstrating that there is both honour and profit in getting back to the soil and staying there.

Among the important conventions which the corn-growers may attend at San Francisco as a means of broadening out their farm education are the following, many of which will be accompanied by up-to-date exhibits:—The International Agricultural Convention; the American Breeders' Association—breeders of better animals, plants, and people; the Association of Agricultural Colleges and Experiment Stations; the U.S. Bureaus of Plant and Animal Industry; the International Congress on Marketing and Farm Credits; the American Society of Animal Nutrition; the World's Alfalfa Congress; the International Potato Congress, with a potato-growing contest; the International Good Roads Congress; the International Congress of Thrift; the Viticulturists' Congress; the National Drainage Congress; and numerous congresses of horticulturists, varied industries, and stock-breeders, with international egg-laying and sheep-shearing and flower-growing contests.

THE SOURCE OR SOURCES OF SUPPLY OF ARTESIAN WATER.

From the very interesting Report (No. 2) of the Members of the Second Interstate Conference on Artesian Water, held in Brisbane in July last, we take the following extracts:—

When taking evidence from pastoralists and others in a number of localities in Queensland, we were much impressed by the general misapprehension which evidently prevails in regard to the actual source of the artesian water. There can be no doubt that this misapprehension has, to a great extent, been caused by the circulation of certain recent literature which, in view of its effect, can only be described as pernicious.

It is not to be expected that those persons whose success in pastoral pursuits depends upon the use of artesian water will adopt the best means to assist in conserving the supply unless they possess an intelligent conception of its source, and without that assistance it is inevitable that the depletion of the basin will be greatly accelerated. We therefore deem it advisable to publish at this stage a brief statement, in popular language, of the facts which have been accepted by leading scientific

men as accounting for the occurrence of artesian water in the principal European and American basins, where geological conditions similar to those which we have recognised in the Great Australian Basin undoubtedly prevail.

The primary source of the water is the rain which falls upon the exposed surface of certain beds of porous sandstone, by which it is absorbed, and by which it is conveyed to lower levels in the direction in which the beds of sandstone dip. In Southern Queensland, for example, there is a belt of porous sandstone to the north of Roma, and these rocks readily absorb the rain which falls upon them and are therefore recognised by us as the intake beds of this portion of the basin. They have a gentle dip to the south, and the water which they absorb is therefore transmitted very slowly in that direction, under the Rolling Downs country. The intake beds outcrop along the summit of the Dividing Range at a minimum altitude above sea-level of 1,260 ft. (to the north of Blythdale), but the altitude of the sites of all the artesian wells which are fed by these intake beds is considerably less than that figure. It follows, therefore, that the water in any bore to the south of Blythdale is under a hydraulic pressure or "head" equivalent to the difference between the altitude of the bore site and the altitude of the intake beds, less an allowance due to the friction or resistance which the sand grains of the rock offer to the passage of the water. The head or pressure just referred to is undoubtedly the principal cause of the rise of the water above the surface, and if a long vertical pipe be erected above the mouth of the bore casing it will be found that the flowing water will come to rest at a height above the surface which is approximately equal to the height calculated from the observed pressure.

The depletion of the artesian basin must result (and has already resulted in a number of cases) in the reduction of the head, and a corresponding falling off of the yield from flowing bores; moreover, the observations made by the hydraulic engineers in charge of the bores absolutely confirm the conclusions of the geologists in regard to the structure of the artesian basin, the source of the water, and the cause of its flow. It should be understood that the general rate of percolation of the water in the porous rock is very slow, but the rate increases rapidly as the water approaches a bore-hole. For example, at the bottom of a bore the water rushes in with a very high velocity, which, however, decreases rapidly with increasing distance from the bore, so that at a very short distance from it the rate of movement of the water in the sandrock may amount to less than 1 ft. per day.

The artesian flows in Central and Northern Queensland are also accounted for by geological conditions similar to those already described. The intake beds, consisting of a belt of porous rocks extending along the slopes of the Dividing Range, dip in a westerly direction under the Rolling Downs, and the rise of the water is due to the greater altitude of the intake beds as compared with that of the bore sites.

The following sketch section will perhaps assist in making our description clear:—

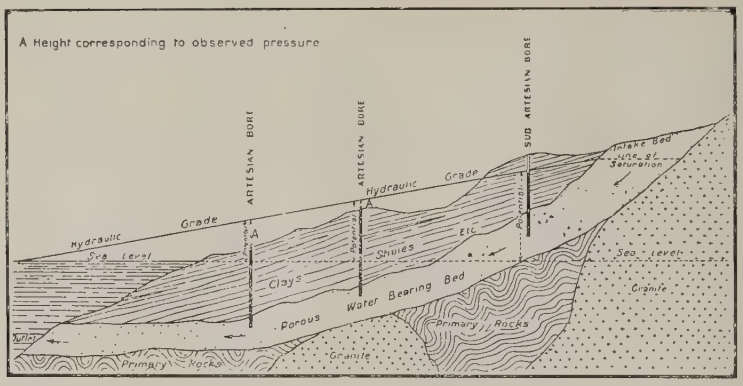


PLATE 70.—GENERALISED SECTION OF AN ARTESIAN BORE WITH AN OUTLET TO THE OCEAN.

THE LOWER LIMIT OF WATER-BEARING STRATA.

So far as our present knowledge extends, there is no evidence that the artesian water of the Great Australian Basin comes from any geological horizon which is lower than the Trias-Jura sandstones. There is no reason why the permo-carboniferous sandstones, some of which are fairly porous, should not be capable of absorbing and transmitting water, but we are not aware of any instance where they occur along the eastern margin of the basin to such an extent as would enable them to act efficiently as intake beds, nor do we know of any bore within the limits of the basin which has derived its flow from rocks of this age.

THE DIMINUTION OF SUPPLY FROM BORES AND REASONS FOR SAME.

DECREASE OF FLOW IN NEW SOUTH WALES.—In practically the whole of the bores sunk in New South Wales the flow is decreasing year by year. On 30th June, 1914, there were 388 flowing bores in this State, of which 351 have been gauged at some period since they were sunk.

Figures have been prepared showing the decrease in flow in all the bores which have been gauged from 1903 to 1913; they are as follow:—

Period.	Number of Bores Gauged.	Total Decrease in Flow between First Year of Period and 1913.	Average Annual Decrease in Flow.
		Per cent.	Per cent.
1903-13, 10 years	21	38·0	3·8
1904-13, 9 years	11	53·9	6·0
1905-13, 8 years	45	45·9	5·7
1906-13, 7 years	75	39·1	5·6
1907-13, 6 years	134	33·2	5·5
1908-13, 5 years	71	27·3	5·5
1909-13, 4 years	132	28·1	7·0
1910-13, 3 years	174	19·2	6·4
1911-13, 2 years	152	13·7	6·9
1912-13, 1 year	202	7·7	7·7

For the period 1903-8 the average rate of decrease for all bores gauged may be taken as about 5½ per cent. per annum, while for the year ending 30th June, 1914, it will probably be about 8 per cent. per annum.

The percentage decrease for 1912-13 is so high that the fullest inquiry appears desirable as to the reasons for the decrease in flow.

In an appendix are given particulars of 11 bores in New South Wales which have been cleaned out, but not deepened. The result of cleaning out these bores has been most disappointing. With the exception of Coolabah and Goondablui Bores, the increase in flow has been small, and in all cases the flow has since decreased.

The inference to be drawn is that the decrease in flow in these cases prior to cleaning out was probably due to loss of pressure, rather than to obstruction by caving or other local causes. This view is supported by the evidence obtained with the use of a compressed air lift tried at Bellata Bore in the Moree district. The original bore at this place was sunk in 1896. When gauged, in May, 1903, the flow was 417,000 gallons per day, but in October, 1911, this had fallen to 57,168 gallons per day, and in February last, when the air lift experiment was made, to about 23,000 gallons per day. Compressed air was applied through a 1½-in. pipe, at a depth of 146 ft. below the surface, when in a few minutes the flow increased to 397,000 gallons per day, thus showing conclusively that there was no obstruction to the flow in the lower portion of the casing, and that the falling off was due solely to decrease in pressure.

In an appendix is given a list of 14 bores, originally flowing, which have now ceased to flow. By reference to the map on which the amended boundary of the flowing supply has been shown, it will be seen that these bores are all on the eastern and southern edges of the basin.

Attention is particularly directed to Bullagreen Bore. The flow from the original bore in 1906 was 351,366 gallons per day, but in January last the water stood at 2 ft. below the surface. No water was met in this bore below 1,174 ft. A second bore, completed last month to a depth of 1,187 ft. about 2½ miles from the original bore, gave a supply which barely reached the surface.

Decrease of Flow in Queensland.—Of 977 flowing bores in Queensland 124 have been remeasured, and these show that during the last fifteen years there has been a decrease of 40 per cent. in the aggregate flow. It is, of course, possible that the abovementioned reduction in flow may in some cases be due to local causes, such as choking of the bore, casing troubles, &c., yet, in view of the fact that measurements of pressure, which have been made in many of the bores referred to, show a marked decrease in each case, it is reasonable to suppose that the general diminution of flow is referable to the same causes in Queensland as have been so clearly shown to be operative in New South Wales.

When we come to consider the actual causes of the general diminution of flow in two of the States, we are unable to escape the conclusion that the primary cause is the overdraught which has been already made upon the accummulated supply of the Great Australian Basin by the undue multiplication of uncontrolled bores.

Many of the witnesses examined by us fully admitted that future occupants of Crown lands as well as the present holders have rights in

the artesian supply. On the other hand, there were some who took a purely selfish view of the situation, and who insisted that the Government have no right to restrict in any way whatever the use (or abuse) of the water by those who have incurred the expense of putting down bores. We hold an entirely different view of the case, and think that, inasmuch as the artesian supply is a national asset, every member of the community has an interest in its conservation. We venture to urge, therefore, that no person should be allowed to put down a bore unless he be prepared to observe the precautions necessary to minimise waste or leakage.

In our opinion these precautions should include—

(1) The choice of a site where the surface level will admit of the obtaining and use of a sufficient supply without waste.

(2) The proper construction and casing of bores.

(3) The seating of the outside casing in an impermeable stratum in such a manner as will prevent the escape of the water outside the casing.

(4) The partial closing down of bores where the whole of the supply cannot be used by the landholder, and a reduced flow would meet his requirements. This provision, however, should not be applied in cases where there is a probability of its prejudicially affecting the bores.

MARKET GARDENING.

RHUBARB.

Complaints have reached us from two or three farmers that, although they obtained very fine rhubarb roots from nurserymen in Brisbane, the results have been disappointing owing to the stalks not obtaining any height. As rhubarb is grown solely for its leaf stalks, it is essential that these should be induced to grow to the most complete development, and to this end a deep and very fertile soil is essential. A soil of a somewhat clayey nature, and inclined to be moist, is best adapted to this crop, as it suffers quickly from drought. Depth of soil is of the first importance, as the large roots need plenty of room for development. Good rhubarb cannot be grown except on very rich soil. There is no danger of getting it too rich. Heavy applications of stable manure make the best possible fertilisation; but, in its absence, a fertiliser containing available phosphoric acid (8 per cent.), potash (7 per cent.), nitrogen (3 per cent.).

No plant responds more liberally to judicious watering than rhubarb, and, in dry weather, irrigation gives surprising results in the way of increased yield and general vigour of the plants. Water, then, should be vigorously used when necessary, but, at the same time, it is not well to overdo it, and thus make the ground sodden. A heavy top-dressing of manure should be applied in the winter, and forked in in the spring, care being taken not to break or disturb the roots in any way.

Pastoral.

HOW THE WAR WILL AFFECT THE WOOL MARKET.

Writing on 7th August, the London correspondent of "The Pastoral Review" thus discusses the prospects of the wool market:—

"How changed is the scene compared with a month ago! At that time the sun of prosperity was in the heavens, hardly a cloud darkened the horizon, and everything indicated a continuance of the high values ruling for Australian merino wools. We are not disposed to write in a pessimistic tone, but the outlook is black indeed. Somehow wool has a happy knack of righting itself, and when everything has been uninviting, and the outlook anything but cheerful, the raw material has always stood upon its feet, and to-day we are hoping for the best. At the same time the biggest calamity has befallen European nations that we have ever seen, and everything is in a state of chaos. England has joined issues against Germany. In the best-informed circles this has for some time been regarded as inevitable. Let the reader soberly think for a moment that England, France, Belgium, Germany, Russia, Austria-Hungary, and Servia are all engaged in war, and he has a scene before his eyes the like of which has never been known in the history of the world. It simply means that the worst has come to the worst, and how wool will fare no man living knows. One could have formed some reliable opinion as to the likely course of values if even Great Britain had preserved the isolation which many had been hoping for; but with Germany invading Belgium, it seemed as if neutrality no longer could be observed. It therefore means that only one important consuming country in the wool world is left out, America being that favoured nation. To the end of the July series, 1914, Continental buyers took 1,607,000 bales out of a total of 2,486,000 bales.

"What Australian pastoralists want is an unimpaired market, but we are afraid that a ruinous war cannot but cripple the purchasing and consuming capacity of both France and Germany, two of the best customers Australia has enjoyed for her merino wools. Of course, a good deal can happen before this letter appears in print, and we are mentioning these facts in passing in the hope that the next six weeks will not produce any really disastrous conditions which will directly and adversely affect the next Australian clip, but we must confess having some grave fears. All the same, the wools are there, and it is well known that for producing men's and women's wear fabrics they stand first, and it only needs a healthy trade to see them availed of as much as ever by the spinners and manufacturers of Europe.

WAR REQUIREMENTS.

"In times of war wool is one of the principal commodities that is requisite, and before this letter is in print we are certain to see repeated a good deal of the history of the past. During the South African and

the Russo-Japanese wars wool was in the van, and that is what many expect again. Let one just think of how it enters into the equipment of any war. First, we have a man's outfit—namely, his uniform. That fabric must be made of all wool—at least all English soldiers' outfits, as well as, we believe, those of France and Germany are—because nothing but an all-wool fabric, well made and well milled, will stand the wear and tear of war. There is also his blanket, which is a thick, well-made fabric. Then comes his other equipment—namely, his underclothing, and some very good shirtings are demanded by the British Government. Rugs, stockings—in fact, many things—are required into which wool largely enters, and the majority in this country can see that a big struggle like the one just commencing may mean a big demand for wool, and it is only on these lines that prices can hope to be maintained. In Sydney last week some evidence of the trouble was seen, when Continental buyers had all their limits withdrawn, and prices dropped 10 per cent. It is a good thing that there are no sales in London; otherwise we should certainly have seen a partial slump, owing to the purchasing power of many firms being completely cut off, and quotations absolutely withdrawn.

THE OUTLOOK.

"Things have been reduced to such a state of chaos that what to say about the future we do not know. What can we say? Between now and the middle of September, when this letter should appear in print, very much can happen. Some think that the war will be short-lived; others think that next Christmas will dawn before it is finished. Everybody hopes not. We cannot see anything but lower values for the raw material. Some are believing that the British and other Governments will need so much khaki and other war materials that big weights of wool will be required which will sustain prices, but that remains to be seen. War has always had a crushing effect upon business; and with the present high prices of food throughout all Europe, how can anyone have anything left wherewith to buy clothing materials. There will be millions of families so impoverished by the terrible struggle that they will be compelled to go shabby; in fact, in the race between the belly and the back, the former always wins. We are not pessimistic by any means, but the bright cloud has been completely turned to one of blackness, and the outlook for the approaching new Australian clip is by no means of the best. The British Government has determined to help trade and commerce as much as possible, and West Riding spinners and manufacturers, at an important meeting held yesterday on Bradford Exchange, decided to do their very utmost to run their mills at least three days per week. Their intentions, no doubt, are good; but can they be carried out? Whatever happens, we cannot see the boom that some are forecasting similar to what took place in 1871 to 1873, when the Franco-Prussian war finished. However, we are hoping for the best, and while no doubt good prices will be forthcoming, yet, to be candid, we cannot see that merino woolgrowers can reasonably expect to approach recent values when the next Australian clip becomes available. The best thing that the trade can do is to remain calm, look on and sit tight, and that is the policy of the West Riding trade to-day."

Dairying.

THE DAIRY HERD, QUEENSLAND AGRICULTURAL COLLEGE, GATTON.

Milking Records of Cows for Month of September, 1914.

Name of Cow.	Breed.	Date of Calving.	Total Milk.	Test.	Commercial Butter.	Remarks.
			Lb.	%	Lb.	
Nellie II. ...	Shorthorn... ...	20 July, 1914	1,137	3·6	47·97	
Miss Edition	Jersey	10 July ,,	725	5·5	40·12	
Lady Lie ...	,, ...	22 Aug. ,,	580	5·6	38·40	
Madam Melba	Holstein	8 Sept. ,,	831	3·8	36·97	
Sweet Meadows	Jersey	28 July ,,	571	5·2	35·06	
Lark ...	Ayrshire	27 July ,,	842	3·5	34·46	
Bee	Jersey	3 July ,,	620	4·7	34·34	
Bluebelle ...	,, ...	27 May ,,	602	4·8	34·07	
Miss Bell ...	,, ...	25 Sept., 1913	540	5·2	33·15	
Davidina ...	Ayrshire	17 July, 1914	826	3·2	30·81	
Lady Margaret	,, ...	19 June ,,	692	3·8	30·78	
Countess of Brunswick	Shorthorn... ...	26 July ,,	714	3·6	30·05	
Auntie ...	Ayrshire	26 June ,,	663	3·8	29·50	
Lady Melba	Holstein	6 Mar. ,,	718	3·5	29·36	
Burton's Lady	Shorthorn... ...	23 July ,,	728	3·4	28·90	
Lady Athol	,, ...	10 July ,,	625	3·2	23·31	
Lady May ...	Ayrshire	4 May ,,	584	3·4	23·17	
Nina ...	Shorthorn... ...	5 April ,,	538	3·4	21·35	
Lennie ...	Ayrshire	15 Aug. ,,	525	3·4	20·84	
Cocoatina ...	Jersey	20 April ,,	302	4·8	20·48	
Lady Maid...	Shorthorn... ...	17 Mar. ,,	389	4·4	20·14	
Gretchen ...	Holstein	6 May ,,	577	3·0	20·13	

Ration feed: 20 lb. panicum ensilage and 2 lb. of bran per cow.

PEANUTS AS PIG FOOD.

The value of peanuts for feeding pigs has apparently not yet been realised by Queensland farmers; and if any of them have experimented with them, the results have not been published for the benefit of those engaged in the very profitable business of pig-raising. According to the latest available statistics issued by the Government Statistician, there are only 140,045 pigs in the whole State; and this represents a decrease of 3,650 on the numbers for the previous year. This decrease, however, is more than counterbalanced by the fact that nearly 10,000 more pigs were killed in 1913 than in 1912. There are seven factories which confine their work to handling swine only, while others deal with other stock as well. In these factories, during 1913, 172,084 swine were slaughtered; but in this number are included those slaughtered by the farmers.

The number of cultivated holdings in the State is 23,472; and the area under cultivation is 920,010 acres (or about 309 acres per holding),

out of which large area only 163 acres are returned as being under peanuts; and the average number of pigs per holding is only six.

An acre of peanuts will yield from 1,500 to 2,000 lb. of nuts (2,420 lb. per acre were produced this year on one of the State Farms). It has been shown by Professor Cottrell, a pig-raiser in Texas (U.S.A.), that it requires less than 3 lb. of peanuts for each 1 lb. of gain on pigs that weighed from 40 to 50 lb. at the start. At the Arkansas Experiment Station, an acre of ripe peanuts pastured by hogs made 1,252 lb. of gain; while an adjoining cornfield, yielding 30 bushels to the acre, only made 436 lb. of gain per acre on hogs. At the Alabama Station with corn charged at 70 cents (2s. 11d.) a bushel, each 1 lb. of gain on hogs fed with corn alone cost 7·63 cents (3¾d.); while the cost per lb. when they were fed corn, and kept on peanut pasturage, ranged betwene 1·85 cents (less than 1d.) and 2·28 cents (1¼d.).

It is little over four years ago since American farmers in the south-west began to turn their attention to peanuts, which, up to the year 1909, they had treated as unworthy of notice. Since then the development has been very rapid. Five years ago there were, as in Queensland to-day, only a few experimental plots here and there over the country in one county. The following year 3,000 acres of the Spanish peanut were put in; then, 5,000 acres; and now the estimated area is 15,000 acres. Several other counties in Oklahoma have followed suit. And the major portion of the crop is devoted to pig-feeding and oil-making. There is, undoubtedly, a good opportunity for a great expansion of the pig-breeding industry, as the bacon factories have difficulty in obtaining a sufficient supply of pigs to keep them going at full pressure. This deficiency might be made up by the cultivation of peanuts, which have been proved to be far superior to corn, when fed in conjunction with other foods, in promoting rapid growth and considerably increased weight as compared with the results from other food.

PASTEURISATION OF MILK.

By G. SUTHERLAND THOMSON, F.R.S., &c.

Pasteurisation is a process of heating liquids which derived its name from the great French scientist, Pasteur, who was the first to discover the death-dealing action of heat on micro-organisms in liquids. Pasteurisation is frequently confounded with sterilisation, which claims to completely destroy bacteria by the action of high temperatures. In some instances heat is required much beyond the boiling point of water before germ spores are killed. Some organisms can withstand a temperature exceeding 300 deg. F., and others are active for months at temperatures below freezing point. Fortunately, the majority of pathogenic or disease-causing germs are of the common non-spore-making class, and offer little resistance to heat.

When milk is raised above boiling point for thirty minutes it is termed sterilised; but sterilisation has a detrimental effect upon the milk solids, decomposing the sugar, coagulating the albumen, partially

decomposing the casein, and rendering insoluble the lime salts. Sterilisation and pasteurisation can be done upon the intermitten process; lowering and raising the temperatures afford the ferments an opportunity of developing, followed by death at their weakest moments.

It is generally believed that scalding and rapid cooling are all that is necessary to destroy bacteria, and ensure for the milk a high keeping property. Pasteurising and slow cooling will give to milk increased preservation, as the following test will show:—

Fifty gallons of mixed milk were pasteurised at a temperature of 160 deg. F. One half of this quantity was immediately refrigerated to 40 deg. F., and passed into 15-gallon churns. The other half was conveyed direct from the pasteuriser into two churns of similar capacity, which were standing in a vat of chilled water. The lids were put on the four cans, and twelve hours after the milk was pasteurised tests for acidity were made. The refrigerated milk showed a higher degree of acid, and a lower degree of bacterial purity. Further examinations proved conclusively that the unrefrigerated milk possessed higher keeping qualities. The writer attributes this to the cooking to death of the bacteria, and by the suffocation, so to speak, of the aerobic germs through the absence of air. Where the milk is pasteurised and immediately afterwards refrigerated, the heat is not sufficient to destroy the bacteria, and the cooling process provides air for the multiplication of the organisms that survive the scald.

Milk pasteurised and cooled in the cans for household purposes has not a cooked taste as one might suppose.

Nothing is more urgent in connection with the food of a nation than the purity and wholesomeness of the milk that caters so largely into the diet of young and old, rich and poor. The cry is for a pure and healthy supply, and efforts are now being made in the cities of the Empire to reform the industry. Who is to blame for an unclean milk supply of any country, city, or town? Is it the farmer, the retailer, the consumer, or all of them? Upon each rest responsibilities, but the State is the guardian of the public in food supplies. Year in and year out, one reads of the danger of impure milk, of the fading confidence of the consumer in his supply; but, in many countries, a poor effort has been made to give the public a feeling of real safety in the milk upon which the lives of children and the sick so much depend. In Britain, with her boasted laws of civilisation, her great seats of learning, and commercial status, little has been accomplished to put the milk supply upon a healthy basis. And it is only recently that the use of chemicals (poisons) to preserve milk was made prohibitive in England. It is perhaps well for England that the death-roll among infants, through the indiscriminate use of preservatives, cannot be estimated. Great as their loss has been, there are others to be considered. State negligence of the interests of the dairy farmer has inflicted upon him severe penalties, to the gain of foreign imports. The condensed milk business, for example, flourishes in England, but the raw material does not come from the British cow; condensed milk is imported principally from continental countries, where rigid laws have been enforced by Governments to raise the purity and general quality of the milk from which the condensed article is

made. Those who have travelled in Switzerland cannot fail to have observed the power the State exercises over the milk supply, and for what reasons, might we ask? Firstly, because experience has proved that an ounce of tainted milk would ruin the whole making of the condensed product, with the inevitable result that the industry would suffer if the State neglected to guard the interests of the producer; and secondly, England, with her fine lands and ideal conditions for dairying, is one of Switzerland's best patrons. To retain her confidence in the virtues of condensed milk is only by the vigilance of the Swiss Government in keeping the supply pure and wholesome. British consumers of milk are indebted to Switzerland, and no one has higher praise than the writer for the dairying industry of that splendid little country.

MILK AND DISEASE.

This subject is receiving a good deal of attention at present, and perhaps one is correct in saying that no more important question affecting the health of people calls for the consideration of all parties. The milk supply should be put on a footing that will restore the inplicit faith of the public in the purity and value of the product as an indispensable article of food.

Having had occasion to make a study of milk problems in different countries, and having been privileged to conduct a number of official investigations connected with the milk supply, the writer will give a frank opinion on some phases of milk and its relationship to disease. It must be admitted that milk is a medium for the conveyance of tuberculosis to man, and the danger is increased when cows suffer from the disease in the mammary organs. Fortunately, the percentage of such cases is not large, and the possibilities of milk becoming infected with tubercle bacilli when the udder is healthy need not cause anxiety. Experience has shown that the contamination of milk with pathogenic bacteria, including the tubercle bacilli, can be traced to the carelessness of milk consumers, as well as to unhealthy cows. . . . If an inquiry were made into the way milk is kept and treated by the average householder, startling revelations would follow. No one would dare dispute the fact that this product is kept in jugs and receptacles that are, bacteriologically speaking, breeding grounds for microbes, and the placing of these vessels outside the doors of householders at night time to receive the morning milk is much to be regretted. . . . Pasteurisation is a valuable protective measure, but it must be admitted that pasteurisation will not remedy the chief evils of the milk supply. . . . Although the writer is a supporter of pasteurisation under common-sense conditions, it is known that the application of heat reduces the health-giving and digestive properties of milk, and heated milk that has become stale is positively dangerous to the consumer, while raw, clean milk, with its varying percentages of lactic acid, possesses valuable medicinal properties. In the Near East, where acid milk is the national drink of the Bulgarians, the observations of the writer proved the tremendous claim healthy raw milk has over the pasteurised product. But, in large cities abroad, and where the summer heat is extreme, and the deterioration of milk hastened, pasteurisation is indispensable.

The Horse.

THE HORSE ON THE FARM AND IN WAR.

There is no denying the fact that in our cities and towns the horse has, to a very large extent, been superseded by motor-cars, motor 'buses, and motor-lorries. Even in the bush and on the Western plains, the usual horse coaches have been discarded in favour of motor vehicles. But this does not imply that the day of the horse is over. On the contrary, the demand for horses of certain classes is as great as ever. Notwithstanding the employment of motor power on the farm in some cases, the fine, strong, active farm horse is as necessary and in as much evidence as before the advent of the former power. On stock farms and cattle stations no motor vehicle can take the place of the stock horse; neither can the machine be utilised by overland drovers from distant stations to the nearest railways. Then we come to the demand for horses for military purposes, such as for cavalry, mounted infantry, field artillery, army transport, ambulance, &c. Tens of thousands of horses for these purposes are required even in times of peace. What must be the number required during such a war as the present European war now in progress, when every arm of the service is brought up to a war footing? Not only are thousands of horses killed during the course of pitched battles and in countless minor engagements, but disease, starvation, and overwork carry off many more. It has been said that in the Austrian Army an epidemic of glanders has occurred amongst the horses—a disease fatal not only to the animals, but dangerous to the men who tend them. Remounts for all the belligerents will be in great demand. As is pointed out in an English journal, in by-gone days it was possible to fall back on cab horses, 'bussers, trammers, and the like, but these have practically disappeared from the streets, and so cannot be subsidised, no matter how great the need.

The "Live Stock Journal" for 31st July has the following on

THE HORSE'S RIVAL.

In the showyard horses are as fascinating and as valuable as they have ever been, which is proved by the number of people who make a point of watching the judging at all of the horse rings; while the crowds which patronise shows only for amusement will desert the other parts of a large showyard in order to witness the jumping and driving competitions, which alone make it worth while to erect a grandstand.

It is therefore evident that the horse holds first place in the minds of English people, and that a show without horses would be an exceedingly

tame affair in the eyes of those who attend, seeing that the horse classes are those which they are willing to pay for seeing.

If we pass from the showyard to the street, however, the position and the prospects of the horse are far less secure, for the reason that the noble animal is to some extent superseded by mechanical vehicles which leave the horse-drawn conveyance far behind when speed is the desideratum; but if a safe, as well as a smart, turnout counts for anything, the one drawn by horses, or, at least, a horse, must still take the place of honour, seeing that these horseless vehicles not only go "the pace which kills," but actually do kill and maim hundreds of people each year, especially children, as one cannot cross a busy street without endangering its life. In the interests of horses and horse-breeders, it is only fair to ask that the number of fatal and serious accidents caused by motors and such-like vehicles should be published at regular intervals, together with those caused by horses, so that the comparison as regards the destruction of human life could be easily seen.

Not that people who have grown accustomed to go to business or to pleasure at such a tremendous pace would turn once more to the comparatively leisurely-going horse-drawn vehicle, although they would be far less likely to suffer from nervous breakdowns if they did; but the daily papers have a tendency to put the all-conquering power of the motor in a prominent position, and say little or nothing about what may well be called the all-killing power of the same. But this journal is devoted to the interests of high-class live stock, including horses; hence the need to champion their cause.

Those who use main roads for horses cannot move a yard without being forcibly reminded that, although made for horse-drawn vehicles to travel on, they have been converted into asphalt or tarred tracks on which one cannot ride or drive a horse with pleasure or safety owing to their glass-like surface, and this doubtless helps to cause many who would be horse-users to give them up.

So far it is only in the street and on the road that the horse's rival holds sway. The nation needs horses to mount its soldiers. The hunting man must have them to follow hounds, and such sport is as popular as it ever was. Finally, the farmer cannot plant or secure his crops without horses. In fact, agriculture has never been so dependent on horse-drawn machinery as it is to-day, so that there are fields where the horse holds its own, and as a showyard attraction he reigns supreme.

Poultry.

REPORT ON EGG-LAYING COMPETITION, QUEENSLAND AGRICULTURAL COLLEGE, SEPTEMBER, 1914.

Five thousand nine hundred and sixty-one eggs were laid during the month, an average of 149 per pen. R. Burns' Black Orpingtons (No. 1), T. Fannings's Black Orpingtons, and Cowan Bros.' White Leghorns tie for the monthly prize with 163 eggs each. The following are the individual records:—

Competitors.	Breed.	Sept.	Total.
T. Fanning	White Leghorns ...	144	754
A. T. Coomber	Do.	162	733
Kelvin Poultry Farm	Do.	128	711
Moritz Bros., S.A.	Do.	157	677
Loloma Poultry Farm, N.S.W.	Do.	154	669
Loloma Poultry Farm, N.S.W.	Rhode Island Reds ...	153	664
R. Burns	Black Orpingtons (No. 1)	163	655
Geo. Tomlinson	White Leghorns ...	158	640
J. T. Coates	Black Orpingtons ...	149	633
Cowan Bros., N.S.W.	Do.	163	629
R. Burns	S. L. Wyandottes ...	153	615
J. R. Wilson	White Leghorns ...	141	613
E. Le Breton	Do.	159	604
A. F. Camkin, N.S.W.	Do.	156	598
R. Burns	Black Orpingtons ...	158	596
Mrs. Bieber	Brown Leghorns ...	151	590
A. H. Padman, S.A.	White Leghorns ...	159	584
J. Gosley	Do.	146	584
R. Jobling	Do.	139	580
T. Fanning	Black Orpingtons ...	163	577
E. V. Bennett, S.A.	White Leghorns ...	151	573
Geo Austin	Do.	133	573
J. Franklin	Do.	150	572
Mrs. Munro	Do.	152	568
J. T. Coates	Do.	156	567
J. D. Nicholson, N.S.W.	Do.	132	564
Marville Poultry Farm, Victoria ...	Do.	156	563
J. Manson	Do. (No. 1)	144	558
Derrylin Poultry Farm	Do.	153	555
F. McCauley	Do.	153	553
J. Kilroe	Do. (No. 1)	131	536
J. Kilroe	Do. (No. 2)	144	536
Douglas Moreton, N.S.W.	Do.	141	529
Range Poultry Farm	Do.	147	522
Mrs. Bradburne, N.S.W.	Do.	148	520
J. Zahl	Do.	138	511
J. N. Waugh, N.S.W.	Do.	130	495
C. M. Jones	Do.	151	493
J. M. Manson	Do. (No. 2)	149	467
J. Murchie	Brown Leghorns ...	146	464
Total	...	5,961	23,425

THE ROOSTER AS AN ENEMY.

The rooster (says the "Nor'-West Farmer") is one of the worst enemies the farmer can have about the flock during the heated days of midsummer. This has been abundantly proven during the past eight weeks in this country. Every dealer in the egg business could tell of hundreds of dozens of rotting eggs coming out of cases that were marketed within a few days of the time they were laid. Thousands of city housewives could tell of eggs that seemed to deteriorate very rapidly during the hot weather of July.

In most of these cases the rooster in the flock has been the cause of the loss. The egg is fertilised, and the heat has been sufficient to start incubation. Then the egg is spoiled, and it rapidly develops its claim to be classed as a common "rot." Infertile eggs are very little affected by the heat. Of course, a reasonable degree of warmth is conducive to the spread of moulds, &c., but if protected from these, an infertile egg, though its contents will shrink somewhat from evaporation, will stand any reasonable degree of summer temperature without other injury.

FATTENING FOWLS.

The question of fattening fowls is a most important branch of commercial poultry keeping, yet, if one may judge by the condition of the poultry sent in for sale to the Brisbane and other markets of this State, it is a branch of the business which is more honoured in the breach than in the observance of it. As a general rule farm-bred fowls would be expected to be plump and fleshy, but the reverse is usually the case. The fowls have the run of the place, and pick up any amount of food of various kinds, particularly waste corn, either on the field or round the barn, but this is not the way to fatten fowls for the market. There are certain stock foods used by professional fowl fatteners in Europe which not only fatten the birds, but which also produce plenty of breast meat. Mr. E. Cobb, writing on this subject in "The Feathered World" some considerable time ago, described what a really good table fowl is, and pointed out the best means to be employed to produce such. In the first place, a fowl to be classed as "a prime" should have white skin, legs, and feet. The bird should be young, and if a cockerel his spurs should not have commenced to shoot, and he should weigh when first put into the fattening coop not less than 5 lb. The breast bone should be perfectly straight, and plenty of breast meat should be carried thereon.

There are a number of crosses which produce most excellent table birds—almost any cross with the Langshan will produce a bird of good quality—but there is no cross which, when viewed from every standpoint, will compare so favourably for this purpose as that between the Indian Game and the dark or coloured Dorking. The Indian Game carries more breast meat than any pure breed living, and the Dorking possesses the

longest keel, and has white legs and feet, so that a combination of these two breeds produces a bird with a superabundance of breast meat, and, at least in nine out of ten cases, fowls with white skin, legs, and feet.

Now, about the necessary food. In France the food chiefly used varies somewhat according to different districts, but the most general mixture is, one-half barley meal, one-quarter maize meal, and one-quarter buckwheat. Barley meal is far too heating to be given to fowls shut up in fattening coops. Maize meal undoubtedly fattens fowls, but all it produces is fat, and that of the very worst kind, being yellow fat. Ground oats should be the staple food.

As a rule fatters do not give the food otherwise than in a cold state. That is all very well in summer, but in cold weather the milk or water used should be warmed, thus making the food not hot, but nicely warmed, when taken by the birds, or when injected into the crop by the crammer.

The feeding times are at 6 a.m. in summer, and 7.30 a.m. in winter, then again at 5 p.m. in summer and 4 p.m. in winter, but young spring chickens require an extra feed at noon, and some large birds, quick at "emptying," may also with advantage be fed three times a day.

So much for the feeding of the birds to be fattened. We now come to the preparation of the fatted bird for market, supposing it to be killed and plucked.

Frequently—we might say, very generally—when poor birds are sent to the market the poulterer breaks the breast-bone, arguing, and truly so, that this process gives the bird the appearance of looking plumper than it really is, but that, as soon as the fowl is brought to the table and the knife is inserted into the breast, the deception is evident. Most purchasers of ready-dressed fowls in Brisbane and elsewhere have found that the plump-looking bird they purchased has proved to have practically no breast meat whatever. If you have a prime quality fowl with a good meaty breast, such as the game fowl usually carries, by all means leave it alone, because little or no improvement in its shape will be derived by breaking it down.

It is well known that some of the expert trussers in London poulterers' establishments will literally smash up a fowl before commencing to truss it, so that it lies almost as flat as the proverbial pancake, and then, by carefully inserting the fat under the skin, which had been taken from the gizzards, &c., of other well-fatted fowls, build it up to perfection.

With reference to the fattening coop: It is repeatedly recommended that coops consisting of small compartments, just sufficient to contain a fowl, and covered all over, with the exception of a small opening to enable the bird to put its head out and feed, and the bars at the bottom to allow of the manure passing into a tray beneath. Does it not stand to reason that if you pick a bird up off a farmyard or from anywhere

else where it has had its liberty, and confine the poor brute in a dark-some cell, and in solitary confinement, that it will pine and fret, and, instead of putting on flesh, will weigh, at the end of three weeks or a month (those that survive), less than they actually scaled when first imprisoned?

The proper style of coop for the fattening of fowls is 8 ft. in length, 20 in. in breadth, 18 in. in height, divided into four compartments. The top is closed with 2½-in. battens, nailed 2 in. apart. The back is matchboarded. The front and divisions consist of iron bars ⅛ of an inch in thickness. Each compartment has a sliding door, and is capable of holding from six spring chickens to four large fowls, on an average about five. The bottom is nothing but narrow bars running from end to end, ¾ in. in thickness and bevelled off on the *upper* portion on each side to within ¼ of an inch. A trough is hung in front for the fowls to feed from.

The usual time occupied in fattening a fowl is about three weeks, but good-sized, well-conditioned pullets often taken only a fortnight, whereas very large-framed cockerels will take four, or even five, weeks before they are fully fatted.

TIMES OF SUNRISE AND SUNSET AT BRISBANE—1914.

Date.	September.		October.		November.		December.	
	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.
1	6·3	5·33	5·29	5·47	4·58	6·5	4·46	6·28
2	6·2	5·34	5·28	5·48	4·58	6·6	4·46	6·28
3	6·1	5·34	5·27	5·48	4·57	6·7	4·46	6·29
4	6·0	5·35	5·26	5·49	4·56	6·7	4·46	6·30
5	5·59	5·35	5·25	5·49	4·56	6·8	4·46	6·31
6	5·58	5·36	5·24	5·50	4·55	6·9	4·46	6·31
7	5·57	5·36	5·23	5·50	4·54	6·9	4·46	6·32
8	5·56	5·37	5·21	5·50	4·54	6·10	4·46	6·33
9	5·54	5·37	5·20	5·51	4·53	6·11	4·46	6·33
10	5·53	5·37	5·19	5·52	4·52	6·11	4·47	6·34
11	5·52	5·38	5·18	5·52	4·52	6·12	4·47	6·35
12	5·51	5·38	5·17	5·53	4·51	6·13	4·47	6·36
13	5·50	5·39	5·16	5·53	4·51	6·14	4·47	6·36
14	5·49	5·39	5·15	5·54	4·50	6·14	4·48	6·37
15	5·48	5·40	5·14	5·54	4·50	6·15	4·48	6·37
16	5·46	5·40	5·13	5·55	4·49	6·16	4·48	6·38
17	5·45	5·41	5·12	5·56	4·49	6·17	4·48	6·39
18	5·44	5·42	5·11	5·56	4·49	6·18	4·49	6·39
19	5·43	5·42	5·10	5·57	4·48	6·18	4·49	6·40
20	5·42	5·42	5·9	5·57	4·48	6·19	4·50	6·40
21	5·41	5·42	5·8	5·58	4·47	6·20	4·50	6·41
22	5·40	5·43	5·7	5·58	4·47	6·21	4·51	6·42
23	5·38	5·43	5·6	5·59	4·47	6·22	4·51	6·42
24	5·37	5·44	5·5	6·0	4·47	6·22	4·52	6·43
25	5·36	5·44	5·4	6·0	4·47	6·23	4·52	6·43
26	5·35	5·45	5·4	6·1	4·46	6·24	4·53	6·43
27	5·34	5·45	5·3	6·2	4·46	6·25	4·53	6·44
28	5·33	5·46	5·2	6·2	4·46	6·25	4·54	6·44
29	5·32	5·46	5·1	6·3	4·46	6·26	4·54	6·44
30	5·30	5·47	5·0	6·4	4·46	6·27	4·55	6·45
31	...	...	4·59	6·5	...	...	4·56	6·45

Phases of the Moon.

			H.	M.	
5 Sept.	○	Full Moon	12	1	a.m.
13 „	☽	Last Quarter	3	48	„
20 „	●	New Moon	7	33	„
26 „	☾	First Quarter	10	3	p.m.
4 Oct.	○	Full Moon	3	59	p.m.
12 „	☽	Last Quarter	7	33	„
19 „	●	New Moon	4	33	„
26 „	☾	First Quarter	8	44	a.m.
3 Nov.	○	Full Moon	9	49	a.m.
11 „	☽	Last Quarter	9	37	„
18 „	●	New Moon	2	2	„
24 „	☾	First Quarter	11	39	p.m.
3 Dec.	○	Full Moon	4	21	a.m.
10 „	☽	Last Quarter	9	32	p.m.
17 „	●	New Moon	12	35	„
24 „	☾	First Quarter	6	25	„

State Farms.

ROMA.

Report for September:—

Meteorological.—The dry conditions of August were partially relieved during the second week of the month, when 58 points of rain were recorded. Since then warm days and strong winds have been experienced, consequently at time of writing the outlook is similar to what it was at time of forwarding previous month's reports.

The maximum temperature recorded was 86·5 deg., average 78·0 deg. Minimum temperature was 38·0 deg., average 49·0 deg. Rainfall, 58 points, representing three falls.

Winter Cereals.—The early sown early watering varieties should be fit to harvest within the next ten days. Some of these crops should yield at least 7 bags to the acre unless the grain is very much pinched. The effect of the rain upon the early-sown new-season maturing varieties was most marked, and they will without any more give a light yield. Should rain fall within the next few days they will improve wonderfully. Some of the new crossbreds give promise in some essential features of being better than any varieties at present being grown here, which is very gratifying.

Vineyard.—The vines are making wonderful growth, and most varieties give prospects of good yields.

Orchard.—Most of the trees have blossomed freely. Rain is needed to ensure the setting of the crop. More especially does this apply to the citrus fruits.

Summer Crops.—The lack of sufficient moisture to ensure germination, or to give the land where required the final preparation, has greatly retarded the sowing of these crops. The following have been put in to date, viz.:—Peanuts, 1/7 acre, above ground; melons, 1/16 acre, partial germination; seff grass, 9/10 acre, sown dry soil; kaffir corn, 6·5 acre, sown dry soil; feterita, ½ acre, sown dry soil. When sufficient rain is experienced to enable the land to be reduced to the desired tilth a further 9 acres will be devoted to the growth of white kaffir, sorghum, &c.

Hay.—Owing to the wheat on the areas sown originally for hay purposes having given promise of yielding good crops of grain, it has been permitted to stand for that purpose, and only those of poor prospects have been converted into hay. So far, 6 acres have been cut for this purpose, and the material will be ready to draw in by the beginning of next week. As there is not any prospect of utilising more of the winter cereal crops for this purpose, sowings of summer crops will have to be made.

Visitors.—These have been more numerous of late.

Stock.—Cattle and horses look exceedingly well considering all things.

Buildings, &c.—The balance of the round timber for the stables has been obtained, also sufficient to put up a yard and a crush.

All work such as watering trees, chaffcutting, hoeing, harrowing, cultivation, &c., has been carried out as required.

Tropical Industries.

SUGAR-CANE CULTIVATION IN THE PHILIPPINES.

While sugar-cane is not a plant which requires an extremely fertile soil in order to yield good returns, nevertheless it should be understood that the higher the state of fertility the greater the yield that may be expected.

Doctor Stubbs found that each ton of Louisiana purple cane removes from the soil 0·8 lb. (0·361 kilo) of lime, 2·17 lb. (0·985 kilo) of potash, 1·48 lb. (0·674 kilo) of phosphoric acid, and 1·5 lb. (0·68 kilo) of nitrogen.

A good soil should produce 75 tons of cane per hectare (2½ acres) under proper conditions, and this often is very much exceeded. With the removal of such a crop of cane there will be taken from the soil 28·5 kilos of lime, 73 kilos of potash, 47·5 kilos of phosphoric acid, and 51 kilos of nitrogen. (1 kilo = 2·204 lb.) If none of this material is again returned to the soil, and no attempt made to restore the necessary plant-food elements thus extracted, the soil is forced to diminish year by year in fertility, until eventually a state will be reached when it will no longer produce a profitable crop.

The ashes from the bagasse are usually applied to the roads or used to fill up depressions about the factory. This may be combined with the filter-press refuse, and thus a complete fertiliser made for cane which may be applied with benefit on practically all cane soils.

The juice from the sugar-cane contains little or no mineral matter, consequently, practically all that was originally in the cane will be recovered from the ash of the bagasse; this, judiciously applied to the land where the cane was removed each year, will form the only fertiliser that is needed, excepting the nitrogen, which was mostly lost in burning the bagasse. The cane lands of these Islands have been cropped for many years, and consequently most of them are becoming depleted in the mineral elements required by the cane, since no attempt has been made to restore them even in the application of the bagasse ashes.

Since the climatic conditions in these Islands are such that often a great deal of water falls in a few months during the rainy season, soluble plant-food elements at this time are liable to become badly leached and thus lost to the plant. This is especially the case where soluble commercial fertilisers are applied. Another point is that the young growing plant needs these elements the most during the early stages of growth. It is therefore an excellent scheme to apply the fertilisers in two or three applications. The first, consisting of about one-third of the total amount to be applied, should be scattered in the rows immediately after the irrigation water has passed through and just before the planting is to be done. This will have the effect of locating

itself in the very region where the growing plant, and particularly the young plant, needs it most. In this case it is leached downward and thus induces the roots to take that same course, which brings them in contact with a supply of plant food as well as a ready supply of moisture.

Another reason why this subsoil here is often found to be quite deficient in these elements is in the fact that only very extremely shallow ploughing has been practised, so that no opportunity has been offered the cane to draw its necessary subsistence from the underlying ground or subsoil.

Preparation of the land.—This is one of the most important parts of the work and one that is greatly neglected in these Islands.

In the first place, the land should be thoroughly and carefully ploughed. There is no danger in ploughing deep for sugar-cane, but, on the contrary, much to be gained. The roots of this plant will penetrate to a great distance if the subsoil is properly broken so that they will be within reach of a constant supply of moisture. It is asserted by some that the crop immediately following the first deep ploughing is likely to be somewhat lighter than usual. This assertion may be well founded since a quantity of the undersoil is being stirred up which is likely to be deficient in nitrogen on account of there being little or no humus mixed with it the first year or so. In order to establish a system of permanent agriculture, however, it is imperative that the soil be ploughed to a sufficient depth. The ploughing of the tough cogon lands is somewhat difficult with the ordinary plough, and a special apparatus for this work was devised by the Bureau of Agriculture to meet the conditions in these Islands.

The lands should next be cross-ploughed either with disc or mould-board plough, and then worked to a fine physical condition by the use of discs, harrows, rollers, &c. Too little attention is ordinarily paid to the packing of the soil after it has been thoroughly worked into a fine mechanical condition. One purpose of thoroughly stirring the ground to a good depth is to properly ærate it, since both sunlight and air are essential to bacterial development in the soil. Certain nitrogen-bearing fertilisers are made available to the plant by this bacterial action. Stirring also loosens up the soil so that the rootlets may penetrate it and aid capillarity so that the water will be brought nearer the surface. The packing of the land with a heavy roller as well as the formation of a mulch of fine dirt over the top has the effect of preventing this moisture from escaping by evaporation. The light soils which suffer badly during the dry season in particular should be treated in this manner. By this means many of the districts which have hitherto produced little in growth during the dry season may be made not only to remain green, but also to grow a great deal as well.

Just before the land is to be planted it should be furrowed out in rows 1½ metres apart. This furrowing may best be done with a form of the large single-shovel plough which throws the dirt up on both sides. Hoes may be used to clean out the furrow thus formed, but they should never be used solely for the work of furrowing out since this

requires an excessive amount of labour and is altogether unsatisfactory. These furrows should be made from 20 to 30 centimetres deep, depending upon the condition of the soil and the subsequent method proposed.

Seed and its preparation.—Only the immature cuttings should be used for planting, since upon reaching maturity the cane becomes woody and loses its ability to send forth new shoots. Where cane is left until full maturity is reached, as in the case of milling, only the topmost joints which are green and contain good eyes should be used. Where it is desired to plant a large area, however, and where there is indication of a limited supply of points during milling time, the cane may be cut early and the whole stalk used for planting.

It is imperative that points should be selected from the best varieties grown in fields free from insect pests and from those which have proved a success in that locality. The points should be cut of such a length that they will each contain two or three good eyes. They should then be placed in piles or tied in bundles and protected from the sun and dry air which would cause them to dry out too much. Likewise, they should be kept from excessive moisture until their final preparation for planting, which will consist of soaking them in clear running water from twenty-four to forty-eight hours before planting. The length of time that they should be soaked will depend upon the kind of points, condition, &c. In no instance should they be allowed to remain in the water until deterioration begins.

Irrigation.—If water is available for irrigation it is well to make the first application a short time before the cane is to be planted. This may be done by allowing the water to move slowly down the furrows in order to give it an opportunity to be taken up by the surrounding soil and thus form a ready supply of moisture for the cane. Subsequent applications of water may be made in the cane rows over the cane until they are thoroughly filled up and then through a furrow along near the cane rows. There is nothing that pays better than the irrigation of sugar-cane during the dry season, and yet this so important a point is grossly neglected practically everywhere in the Philippine Islands. Even where but a limited supply of water is available, as from the small artesian wells, it should be applied on the area it is capable of watering. In many places there are rivers which may be dammed up, causing the water to rise so that but a very small lift would be required to bring it to the cane fields.

Although sugar-cane requires a great deal of water for successful growth, yet it must not be permitted to remain over the cane for any length of time, nor should the land be so saturated that the roots will be in contact with stagnant water, for such a condition will cause them to rapidly die off.

Planting.—In planting the cane it may either be placed flat in the row or inclined at an angle of about 45 degrees; the latter is to be preferred where the ground is not too dry. The points should be placed from 4 ($1\frac{3}{5}$ in.) to 20 (8 in.) centimeters apart in the row, depending

upon their condition, vitality, &c. It must be borne in mind that cane can ripen well only where it has full space for expansion, and also that cane planted moderately thin will stool better than that planted thick in the row. It should then be covered with 4 or 5 centimeters of fine earth, and at each cultivation more earth thrown on until the rows are level with the rest of the ground—or they may be even hilled up during the latter part of the cultivating season. This has the effect of stimulating root growth which will greatly aid in supporting the cane during wind storms. It also induces the growth of new shoots, thus increasing the yield of cane per hectare. Any points which have not germinated should be replanted as soon as possible after they are detected, and this work of replanting should be continued as long as there are any blank spaces.

Cultivation of the Cane.—Nothing is more harmful to growing cane than a hard crust on the top of the ground caused by the action of the sun upon soil that has become run together after rains or irrigation. This has the effect of preventing the proper aeration of the soil which is so essential to bacterial growth.

Careful and thorough cultivation must be practised during the growing season after the ground becomes sufficiently dry, and this should be done fairly deep in order to loosen the soil so that the new roots can better penetrate it.

Weeds and grass, which are so inimical to plant growth, will also be destroyed by proper cultivation.

—"Philippine Agricultural Review."

TOBACCO.

The aim of the tobacco-grower is to obtain a fragrant leaf with good burning qualities. Heavy loam, clay, or peat soils will not do this. The plant being of tropical origin, a warm soil is essential, and one with but moderate quantities of organic matter produces the leaf of finest texture. Rank organic manures must be avoided, as well as all materials containing chlorine. The fine gold leaf tobacco of North Carolina is grown upon a light gravelly soil. A red clay sometimes produces a fine, rich, mahogany-coloured leaf of high value. Limestone soils, too, will yield high-grade tobacco. Potash is of the utmost importance to this crop, which consumes large quantities of it, but in order to obtain a leaf that will burn well, all the forms of potash salts containing chlorine, such as kainit or muriate, must be avoided. Stable manure is preferably applied to the crop preceding tobacco. The 600 lb. per acre of a fertiliser containing available phosphoric acid, 7 per cent., potash, 10 per cent., nitrogen, 3½ per cent. Nitrogen in the form of dried blood gives profitable results.

SHORT DIRECTIONS FOR PLANTING SISAL HEMP AND EXTRACTING THE FIBRE.

1. Lay out the ground with a 12-ft. roadway between every 8 rows.
2. Put in the plants in holes 8 ft. apart every way.
3. Plant them perfectly upright.

4. There is no need to plough up the whole ground. When any tall grass or bushes grow between the rows, cut them down every three or four months. The plants must have no shade.

5. Plants produce better fibre in unploughed than in ploughed ground.

6. Take off any dead leaves from the plants before putting in. Treat them like pineapple plants, and cut off all old roots; by so doing the plants quickly send out new roots, and start growing at once.

7. When planting, allow no soil to fall between the leaves, or the plant will rot.

8. In very dry weather give each plant, when planting out, a pint of water. They will take root in a week, and after that will defy dry weather.

9. Suckers and bulbils may be put out in a nursery until they are about 8 in. high, when they are at their best for planting out.

10. Do not plant in low or wet ground. Dry ridges suit the plants best.

11. When plants are three years old, a first crop of 8 or 10 leaves per plant may be cut. In four years a full crop of 20 leaves may be cut, but this only refers to tropical Queensland. In the South a first crop cannot be obtained under from four to five years.

12. The yield of fibre is 4 per cent. of the weight of leaf. A 4-lb. leaf will give 1½ to 1¾ oz. fibre.

13. If the leaves are regularly cut, the plants will not send up a pole for from ten to fifteen years. When a plant poles, the 200 leaves still left will be lost. But if the pole, at its first appearance, is cut, the plant will live twelve months longer, and all the leaves will be saved.

14. Cut away all suckers, and, if no ground is ready for them, put them in a nursery for future planting.

15. Leaves are ready for cutting when they droop from a perpendicular to a horizontal position.

16. There is no regular season for planting or harvesting. Both operations may be carried out at any time of the year, but September is the best month for planting.

17. A machine for scutching costs about £35 to £40 in Brisbane. Hand machines are unworkable, as a high speed (400 revolutions a minute) is required. Use a horse gear or oil engine.

18. With a good machine (the Lehmann, Death and Ellwood, Todd, Prieto, or Finnigan-Zabriskie) from 8,000 to 150,000 green leaves can be passed through the drum in ten hours. These machines are, however, expensive, costing from £400 to £500.

19. About 100 gallons of water are used daily to wash the fibre as it passes through the smaller machines, and about 1,000 gallons with the largest. When the fibre comes out, it is hung upon wire lines in the sun for a few hours, and after a day or two in the shed it is then ready for baling and sending to market.

20. The cost of production is about 1d. per lb. of fibre. Generally speaking, the whole cost, from cutting to market, is about 40 per cent.

of the value of the fibre—that is to say, if you sell fibre at the usual market value—£35 per ton—the cost of production will be £14, and the balance profit.*

21. The average annual return of fibre is about 10 cwt. per acre for the first year or two, and after that as much as 1 ton. In Yucatan 1½ ton of fibre was produced from two-year-old plants, but this was exceptional, and cannot at all be reckoned on, although at St. Helena Penal Settlement 2½ tons were obtained from an acre, and at Childers a crop averaged 1½ tons.

22. Melbourne will take 2,000 tons of fibre per annum, and there is a never-failing market in Sydney, New York, as well as (before the war) in Germany, France, Ireland, Scotland, and England.

POISONING FLOWERING FOREST TREES AND SPRAYING FRUIT TREES WHEN IN BLOSSOM.

Mr. A. N. J. Hill, Toorbul, has written on the subject of poisoning flowering forest trees, as well as spraying fruit trees, when in blossom. He argues that if the poisoning of forest trees were done when the trees are in flower, the poison would flow with the sap (as intended to ensure destruction of the tree) and would also reach the flowers, thereby poisoning the honey, and hence not only killing the bees, but rendering the honey dangerous to human beings. We have not yet heard of an instance in which the honey has been injuriously affected, but there seems to be good foundation for his suggestion that apiaries may be destroyed by the nectaries of the blossoms of trees being affected, and he reasonably argues that the destruction of forest trees might be undertaken at some time of the year when the trees are not in blossom.

This matter was submitted to Mr. G. Butler, secretary of the Queensland Beekeepers' Association, and his opinion was given as follows:—

"Although I am not acquainted with the methods adopted for the destruction of trees by the use of arsenic, there is some argument in Mr. Hill's contention that its use is a menace and danger to human beings. If the poison were used in close proximity to an apiary there would be a probability of its ultimate extinction from its effects. The spraying of fruit trees when in bloom is also detrimental to the beekeeper, and in America the effect was felt so severely that legislative action had to be taken to protect the interests of the apiarists. I understand that the trees are now sprayed after the fruit has set. Arsenic, being of a sweet nature, would readily attract bees, and being swift on the wing there is every probability that they would arrive safely home before any ill effects were experienced by them."

* It should be understood that the price of sisal fibre fluctuates in response to the price of Manila hemp. For instance, in 1907, Queensland sisal fibre sold at £36 10s. f.o.b. Brisbane. In 1908, the price fell to £24 per ton in August, corresponding to a fall in the price of Manila, whilst in February it realised £30 per ton net.

Forestry.

A POSSIBLE NEW INDUSTRY.

Notwithstanding the fact of there being still some 600,000,000 ft., or more, of timber available in Queensland, the drain upon the timber resources is ever increasing, and many schemes have been proposed for utilising the vast amount of valuable material represented by the heads of pine and other trees left to rot in the scrubs and forests of the State by timber-getters who only carry away the marketable logs, leaving the heads, consisting in many cases of heavy limbs, to go to waste. This abandoned raffle of timber has all got a money value, and that value might be obtained by converting the waste into wood pulp. The United States and Canada are fully alive to this, and so is Germany. The uses of this pulp are numberless, particularly for paper-making. One of the chief New York papers announced that it uses, in its morning and evening editions, some 11 acres of woodland, producing about 7,000 ft. per acre. Something like 280,000 ft. of timber are used for the supply of reading matter to New York by this one paper alone. Germany being now out of the running, an opportunity offers to establish this industry on a large scale in Queensland.

There is, however, another industry which might with advantage be taken up, and that is the utilisation of straw for the manufacture of artificial timber. An English journal, in 1909, stated that over 50,000 boxes of butter arrived in England from Queensland (in 1913-14, 500,000 boxes were graded in Queensland), and described a butter-box, said to have been manufactured in Queensland from barley straw, and pointed out that the 3,000,000 boxes used in Australia annually cost £200,000. The straw boxes would save the dairying industry £40,000 a year. The material for manufacturing the box could be grown in the same paddock that supports the cow. This box was said to weigh 10½ lb., to be damp-proof and odourless. Certainly we never heard of such boxes having been manufactured or used in Queensland. Some were made in Victoria, by intermixing straw with kaolin, but on trial being made to ascertain if they would bear the strain of a load of a layer of twenty boxes, it was found that they collapsed under a load of eleven boxes.

The above remarks lead us to a consideration of the manufacture of

FRENCH ARTIFICIAL WOOD,

described in "The Journal of the Royal Society of Arts," as follows:—

"Some attention has lately been directed in Lyons to an artificial wood which, it is stated, will be of great value as a substitute for natural wood. The process consists in transforming straw into a solid material having the resistance of oak. The straw, after being cut into small pieces, is reduced by boiling to a paste, to which certain chemicals are added. When the paste has been reduced to a homogeneous mass it is put into presses, and planks, beams, laths, and mouldings of all sizes are readily made. This new material can be sawn like natural wood. As a fuel, it emits a bright flame and little smoke. It is further stated to be adaptable to the manufacture of match stems. Many are the uses this article could be put to, notwithstanding the fact that we have plenty of wood in the State, besides that which is stated in the article, and so perhaps open up new industries in its application."

General Notes.

SOW EATING HER PIGS.

It is said that a very effective remedy or preventive is to feed salt-soaked pork to a sow that is commencing to eat her pigs. Any little pigs that are accidentally killed should be chopped up in small pieces and put down in salt brine. These, fed to the sow, will be devoured ravenously, and probably induce vomiting, but it is said that it is a perfect cure. Other remedies are rubbing kerosene, bitter aloes in water, or assafœtida in a glue solution, over the little pigs.

PROLIFIC ORANGE TREES.

At Magaliesberg, South Africa, some wonderful returns have been obtained from orange trees. It is recorded by a grower in "S. African Gardening and Agriculture" (Aug., 1914) that from three seedling orange trees, estimated to be over 50 years old, he has taken 11,030 fruits this season, some of which were 3½ in. in diameter, and expects to get another two or three thousand yet. The trees, which are planted on the side of a dam, are 35 ft. high, and the same in diameter.

Magaliesberg is a district in the Witwaters Rand, north-west of Johannesberg, in the same latitude as Maryborough and Gympie districts, where oranges thrive as well as in any part of Queensland. The 14,000 fruits from these trees represent 1,554 bushel cases, or 518 cases per tree, which at lowest Queensland market prices, say, 4s. per case, would be worth £103 per tree.

NATIVE BIRDS PROTECTION ACTS.

DESTRUCTION OF NATIVE BIRDS.

Notwithstanding the many insect pests which damage or destroy crops of all descriptions, it seems impossible to impress upon the holiday-maker's mind that, were it not for insectivorous birds, these pests would increase to such an extent as to make the raising of field crops, vegetables, and fruit too expensive a business to be profitable. Even a gun tax, to include the mischievous pea-rifle, would be powerless to protect the birds, in consequence of the practical impossibility of enforcing it in country districts. Whilst the legitimate sportsman carefully observes the close season for game birds, the boy with the pea-rifle is troubled with no conscientious scruples on that score. He looks upon every member of the feathered tribe which comes within reach of his weapon as the legitimate object of his nefarious sport. If the attention of these shooters were directed only towards the fruit or leaf eating birds, no objection could be raised towards their sacrificing thousands of them. Unfortunately, they cannot discriminate between

useful and destructive birds; and who is there to teach them? If every State and private school were supplied with well-executed coloured plates of both classes, the teachers would be able to do a great deal towards minimising the evil. We proposed at one time to issue with every Journal one or two such coloured plates, but, unfortunately, these are expensive, and the times have of late been too bad to enable us to carry out the idea. But we shall by no means lose sight of it. Take a few of our insectivorous birds, such as crows, ibis, curlews, owls, night-jars (otherwise moreporks), &c. The crow is generally cunning enough to distinguish between a stick and a gun, and less frequently falls a victim to the gunner. Crows, although they are notorious for destroying chickens, young birds, hares, &c., yet render signal service to the farmer by destroying mice, cutworms, wireworms, &c. It has been calculated in Germany by Herr Rörig that "a field mouse and its progeny will destroy 1,000 plants of grain whilst the latter are developing." We know what tremendous losses the plague of mice inflicted on farmers last year. He also stated that "About 3,000 crows, by destroying mice and other vermin, benefit farmers to the amount of £2,500 per annum. In other words, what is commonly but erroneously known as the carrion crow benefits him to the amount of 11d. per bird per annum over and above the loss it causes him by the destruction of chickens, eggs," &c. Anyone who has watched the flocks of ibis on newly-ploughed land, thrusting their long curved bills deep into the soil, and devouring thousands of worms, grubs, beetles, and larvæ, must be impressed with the great value of these birds; yet how often are they shot in mere wantonness and left to rot on the ground? The number of mice consumed by owls is something incredible.

In 1905 we were indebted to Mr. Hy. Tryon, Government Entomologist and Vegetable Pathologist, for the following information on the food of various birds. He has closely studied their habits and examined their stomachs. This scientific phase of the question we do not attempt to deal with; the object of this article is to draw attention to the indiscriminate shooting of birds, destructive or useful, for no other purpose but sport, or "to keep one's hand in," as swallow and marten shooters express it:—

INSECTIVOROUS AND PARTLY INSECTIVOROUS BIRDS.

Ibis.—The food of the birds comprised by this name consists of frogs, especially in the tadpole state, grasshoppers, grass-eating caterpillars, ground-frequenting caterpillars, soil-frequenting "grubs" generally, young fish, &c.

Carrion Crow.—No bird in Australia bears this name that may be erroneously bestowed on the common crow or raven, or on the white-eyed crow, both of which possess feeding habits distinct from those of the European "carrion crow." The food of the bird of coastal Queensland, the former of the two kinds mentioned, includes grasshoppers, locusts, cicadas, moths, grass-eating caterpillars, soil-frequenting grubs, and large insects generally. Ticks, rats and mice, eggs of poultry and

wild birds, young chickens and ducks (exceptionally); seeds of cereals when broadcasted, plantlets of cereals, maize from the cob (exceptionally), lambs, the eyes of cast ewes and of bogged sheep and cattle; fruit, *e.g.*, pineapples and watermelons; carrion and offal generally.

Pied Crow (*Shrike*).—Insects of various kinds, especially the larger ones—*e.g.*, grasshoppers, locusts, &c.; seeds, berries of wild and cultivated trees, coffee berries, fruit generally—oranges, figs, grapes, strawberries, to most kinds of which it is highly destructive; carrion, including dead birds, &c.

Morepork (Ninix).—The smaller kinds feed on various nocturnal insects, on rodents, on small birds, on young domesticated pigeons. The largest kinds the same, and on birds as large as a laughing jackass—*Decelo sp.* (Brennan).

Night-jar.—On various nocturnal flying insects, and especially on moths.

Laughing Jackass.—On large insects, grasshoppers, locusts, &c., lizards, iguanas (small), snakes, small rodents (rats and mice), chickens, young birds.

Kingfishers (1. *Halcyon*).—Feed on grasshoppers, mantidæ, noctuid caterpillars, lizards (small), tree frogs, spiders, tipulid flies, beetles, white-ants.

Kingfishers (2. *Alcyone*).—Small fish, aquatic insects, flying insects hovering over water.

Butcher Birds (*Cracticus spp.*).—Feed on large insects (grasshoppers, &c.), small lizards and other reptiles, small snakes, caterpillars, soil-frequenting "grubs," small rodents (mice, &c.), nestling birds, small birds both wild and domesticated, very young chickens, hive bees (exceptionally).

Dollar Birds.—Insects (especially beetles) occurring on the wing and in tree-tops; hive bees (exceptionally).

The whole of the State is now under the operation of the Acts, and Queensland is divided into two districts, for which two distinct close seasons are provided. New names have been included in the lists of protected birds. Schedule A contains the names of those totally protected, while in Schedule B will be found those to which partial protection only is afforded. Considering the valuable asset insectivorous birds are to the State, and especially to those people whose occupation is connected with the land, there should be ready assistance given to the Department in the protection of our native birds. It should be noted that any person can prosecute under the Acts.

Reserves can be proclaimed with the consent of the owner or occupier of private lands, and rangers (honorary) appointed when a reserve has been created.

The following particulars—showing the birds which are subject to the operation of the Native Birds Protection Acts, the periods of the year during which the Acts are in operation, and the reserves set apart for the preservation and protection of such birds—are published for general information:—

BIRDS ABSOLUTELY PROTECTED THROUGHOUT QUEENSLAND.

Schedule A.

Common Name.	Technical Designation.
Australian Bee-eaters	Merops
Babblers	Timeliidæ
Bell Birds	Oreoica
Bitterns	Ardeiformes
Black Cockatoos of all species	Calyptorhynchus
Black Swans	Anatidæ
Bower Birds of all species	Ptilonorhynchidæ
Bush Chats of all species	Ephthianurinæ
Cassowaries	Casuariidæ
Caterpillar-eaters	Campophagidæ
Coachwhip Birds	Timeliidæ
Coucals or Swamp Pheasants	Centropodinæ
Cuckoo Shrikes	Campophagidæ
Cuckoos of all species	Cuculidæ
Diamond Birds (Pardalotes)	Dicæidæ
Dollar Birds (Rollers)	Eurystomus
Egrets of all species	Ardeiformes
Fantails	Muscicapidæ
Field Wrens	Timeliidæ
Flower-peckers	Dicæidæ
Fly-catchers (Wagtails)	Muscicapidæ
Fly-eaters	Muscicapidæ
Frogmouths	Podargidæ
Grebes	Podicipediæ
Herons	Ardeiformes
Honey-eaters (except Miners, Wattle Birds, Friar Birds)	Meliphagidæ
Ibises	Ardeiformes
Jabirus	Ardeiformes
Kingfishers (all species)	Alcedinidæ
Kites	Elanus
Land Curlews or Stone Plovers	Œdicnemidæ
Larks of all species	Motacillidæ, Alaudidæ
Laughing Jackasses	Alcedinidæ
Lyre Birds	Menuridæ
Magpies	Gymnorhina
Magpie Larks	Grallina
Martins	Hirundinidæ
Nightjars or Goat-suckers	Caprimulgidæ
Nuthatches or Tree-runners (Woodpeckers)	Sittidæ
Owls	Strigidæ
Parras	Parridæ, Glareolidæ
Parrots (Ground or Swamp)	Pezoporus
Pipits	Motacillidæ, Alaudidæ
Pittas of all species	Pittidæ
Pratincoles	Parridæ, Glareolidæ
Regent Birds	Genus Sericulus (Ptilonorhynchidæ)
Rifle Birds	Paradiseidæ
Robins of all Species	Muscicapidæ
Satin Birds	Genus Ptilonorhynchus (Ptilonorhynchidæ)
Shining Starlings (Calornis)	Eulabetidæ
Shrike Tits	Muscicapidæ
Song Larks	Timeliidæ
Spoonbills	Ardeiformes
Storks	Ardeiformes
Swallows	Hirundinidæ
Swamp Pheasants	Centropodinæ
Swifts	Cypselidæ
Thickheads (Whistlers)	Muscicapidæ
Thrushes of all species	Turdidæ, Prionopidæ
Tit Warblers (Tree Tits)	Sylviidæ
Tree-creepers	Climacteris
Tree-runners	Sittidæ
Warblers	Sylviidæ
White-eyes or Silver-eyes	Zosteropidæ
Wood Swallows	Artamidæ
Wren Warblers	Sylviidæ
Wrens of all species	Sylviidæ

BIRDS PARTIALLY PROTECTED THROUGHOUT QUEENSLAND.

Schedule B.

Common Name.	Technical Designation.
Bronzewing Pigeons	Columbæ
Brown Hawks	Falconidæ
Bustards or Plain Turkeys	Otididæ
Coots	Rallidæ
Cranes	Gruidæ
Crakes	Rallidæ
Curlews	Charadriidæ
Dottrels	Charadriidæ
Doves	Columbæ
Ducks, Wild, of all species	Anatidæ (excepting Black Swans)
Emus	Dromæidæ
Fig Birds	Oriolidæ
Finches (including Plumhead, Banded, Painted, Zebra, and Redheaded Finches, &c.)	Ploceidæ
Geese, Wild	Anatidæ (excepting Black Swans)
Land Rails	Rallidæ
Mallee Fowls	Megapodiidæ
Moor Hens	Rallidæ
Native Companions	Gruidæ
Native Hens	Rallidæ
Orioles	Oriolidæ
Pigeons, all Wild	Columbæ
Plovers	Charadriidæ
Quails	Phasianidæ, Turnicidæ
Rails, Land and Water	Rallidæ
Scrub or Brush Turkeys	Megapodiidæ
Scrub Fowls	Megapodiidæ
Sea Birds, all	
Turkeys, Plain and Scrub or Brush	Otididæ and Megapodiidæ
Waders	Charadriidæ
Water Rails	Rallidæ

Close Seasons.

In District No. 1, from the first day of September in each year to the thirty-first day of March in the following year, inclusive.

In District No. 2, from the first day of November in each year to the thirty-first day of May in the following year, inclusive.

(With the exception of emus on prickly-pear infested lands, where the close season shall be from the first to the seventh day of July in each year.)

For districts, *see* map.

PENALTIES.

If any person shall wilfully kill or destroy any protected native bird, or shall use any instrument whatever, net, or other means for the purpose of killing or destroying any native birds, within the periods hereinbefore mentioned, such person shall, upon conviction, **pay a fine of not less than one pound or more than five pounds.**

If any person shall buy, sell, or knowingly have in his possession, house, or control any native bird at any time within the period hereinbefore mentioned, he shall **pay a penalty not less than one pound or more than five pounds for every bird.**

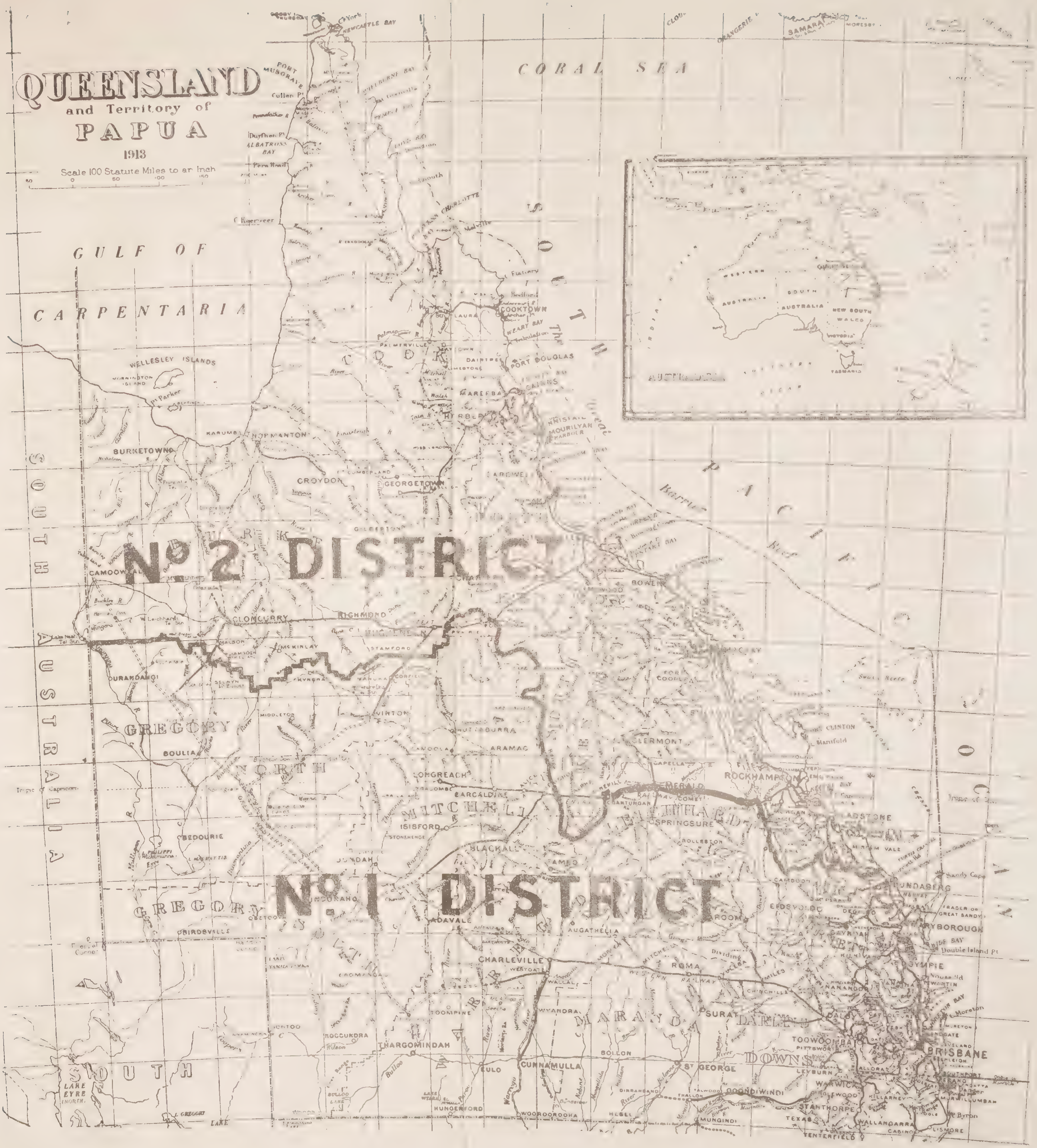
If any person wilfully kills, destroys, or captures any native bird, or uses any instrument, net, or any other means whatever for the purpose of killing, destroying, or capturing any such bird, while it is within or flying over a reserve, he shall be liable upon conviction to pay a **fine of not less than one pound or more than five pounds.**

A moiety of every penalty recovered under the Act shall be paid to the person or persons laying the information.

LIST OF RESERVES WITHIN WHICH THE DESTRUCTION OF NATIVE BIRDS IS PROHIBITED DURING THE WHOLE YEAR.

Situation of Reserve.	For Proclamation and Boundaries *see Government Gazette.*		
	Date.	Part.	Page.
Parish of Enoggera, county of Stanley (Enoggera Reservoir and Catchment Area)	29 Aug., 1885	II.	769
Parish of Gracemere, county of Livingstone	29 Aug., 1885	II.	769
Parishes of Toorbul, Beerwah, and Bribie, county of Canning (Pumice Stone Channels and the shores thereof)	12 Sep., 1885	II.	897
**Parishes of Crow's Nest and Douglas, counties of Cavendish and Aubigny*	10 Oct., 1885	II.	1253
**Parish of Emu Creek, county of Cavendish ... ...*			
**Parish of Douglas, county of Aubigny ... ...*			
Parish of Nerang, county of Ward, Southport	5 June, 1886	I.	1946
Parishes of Moggill and Indooroopilly, county of Stanley (Gold Creek and Moggill Creek Drainage Areas)	13 July, 1889	II.	797
Parish of Boonara, county of Mackenzie (on the leased part of Boonara Run)	14 Sep., 1889	III.	99
Parishes of Enoggera and Indooroopilly, county of Stanley (Mount Coot-tha Reserve)	20 Dec., 1890	III.	1403
Parish of Oxley, county of Stanley (Chelmer Recreation and Water Reserve)	4 Mar., 1893	I.	670
Parish of Hewittville, county of Livingstone (Reserve for Water, Emu Park)	18 July, 1893	II.	583
Parish of Ossa, county of Carlisle, Seaforth	1 Jan., 1898	I.	21
Parishes of Cressbrook, Bowman, and Neara, county of Canning	11 June, 1898	I.	1596
Lake Clarendon	24 Mar., 1900	I.	961
England and Clarendon	25 June, 1900	I.	1650
Fitzroy, Nicholson, Faraday, Calioran	6 July, 1901	II.	564
Gavial and Gracemere (The Duck Pond)	13 July, 1901	II.	633
Horseshoe Lagoon, parish of Selkirk	16 Aug., 1902	II.	421
Cloyna	28 Dec., 1901	III.	990
Parishes of Antill and Jarvisfield	30 July, 1904	II.	249
Parish of Jarvisfield (Church Lagoon)			
Ditto (Red Lily Lagoon)			
Parish of Rockhampton (Murray's and Jardine's Lagoons)	27 Aug., 1904	II.	493
Parish of Charters Towers (Burdekin Weir)	29 Oct., 1904	II.	901
Dunk, Kumboola Island, and Mount Islet, the Family Islands (comprising Thorpe, Richards, Wheeler, Coombe, Bowden, Smith, and Hodson Islands), and Brooks Islands	13 May, 1905	I.	1546
Parish of Yeerongpilly (Russell Wilkins)	16 Dec., 1905	II.	1273
Ditto (Water Reserve)			
Parish of Enoggera (Private lands on Toowong Creek)	11 Aug., 1906	II.	274
Parish of Yaamba (P. F. MacDonald's property) ...	8 Sep., 1906	II.	514
Parish of Noogoon (Mud Island)	8 Dec., 1906	II.	1195
Parish of Broadmere (Lake Murphy	13 Feb., 1909	I.	341
County of Stanley (The Redcliffe Shire)	20 Mar., 1909	I.	738
Parishes of Wyseby and Aubrey (Stud Farm for Breeding Police Horses)	10 July, 1909	II.	70
Parish of Pentland (Pentland Dam and Swamp)	24 July, 1909	II.	220
Parish of Dugandan (A. J. McConnell's property) ...	4 Sep., 1909	II.	587
County of Nares (The Douglas Shire)	16 April, 1910	I.	1002
County of Elphinstone (Abattoir Reserve, Townsville) ...	21 May, 1910	I.	1326
Parish of Taylor, Toowoomba District (Jubilee Park), Redwood Park, Picnic Point, and One-tree Hill)	8 Oct., 1910	II.	1010
Parish of Tingalpa (Shire of Wynnum)	18 Feb., 1911	I.	930
Gladstone Land Agent's District (Capricorn Group of Islands)	5 Aug., 1911	II.	422
Mackay Land Agent's District (Orphanage Swamp and Denman's Water Hole)	23 Sep., 1911	II.	820
Parishes of Rockybar and Eumara (Reeves Lake, &c., on Eumara and Gainsford Holdings)	29 June, 1912	I.	1711
Shire of Widgee	20 Dec., 1913	II.	1741
Parish of Stradbroke (Myora)	11 April, 1914	I.	1036
Shire of Maroochy	2 May, 1914	I.	1173
County of Ward, area on coast from Southport to Pt. Danger	4 July, 1914	II.	78

* Note.—These reserves are for the protection of the following birds only:—Tallegallas or Scrub Turkeys, Bronzewing and all Wild Pigeons, Emus, Regent Birds, Quails.


QUEENSLAND
and Territory of
PAPUA
1913
Scale 100 Statute Miles to an Inch
GULF OF
CARPENTARIA
CORAL SEA
SOUTH PACIFIC OCEAN
SOUTH AUSTRALIA
No 2 DISTRICT
No 1 DISTRICT
COOKTOWN
PORT DOUGLAS
BURKETOWN
CROYDON
GEORGETOWN
CLONCURRY
RICHMOND
BOULIA
LONGREACH
BARCALDINE
EMERALD
ROCKHAMPTON
SPRINGSURE
BEDOURIE
BIRDSVILLE
ADAVALE
CHARLEVILLE
ROMA
BUNDABERG
MARYBOROUGH
GYMPIE
BRISBANE
TOOWOOMBA
WARWICK
STANTHORPE
GOONDIWINDI
ST GEORGE
CUNNAMULLA
THARGOMINDAH
MITCHELL
GREGORY
MARANOA
DARLING DOWNS

Answers to Correspondents.

STRIGA PARVIFLORA.

Above is the name given by the Colonial Botanist to a weed sent him for identification from Bundaberg by Mr. H. T. Harvey, Instructor in Cane Culture. The latter gentleman says:—"It grows on several of the farms; some of the farmers hold the opinion that it is able to kill out sugar-cane to a very remarkable degree. It is a small, insignificant-looking weed, and only grows in small patches. I carefully examined it and found that the roots of the weed are able to attach themselves to the cane roots in a very similar way to the manner in which dodder and other parasitic plants attach themselves to the stems of lucerne, &c. But I am by no means certain that it is so destructive to cane as the farmers say it is. The sample sent consists of the whole plant, together with a little attached soil with cane roots in it. The plant only grows from 6 to 8 in. high, consists of a single stalk, has curious underground leaves or bracts, bears tiny pink flowers, and the roots contain a lot of tiny knobs. Where the roots attach themselves to the cane roots, a knob is always formed." Mr. Bailey says:—"The plant belongs to *Striga parviflora*, a small native plant. The genus *Striga* consists of about thirty species spread over the hotter parts of Africa, Asia, and Australia, and in the two former places have been recorded as parasitic, or half-parasitic, on a number of different plants. Some specimens of the present species were handed over to me with similar remarks by Mr. G. B. Brooks, Instructor in Agriculture, some two years ago. I would have answered this note before, but it was received in the midst of moving into new quarters, and the matter could not be answered at once."

BROOM MILLET.

A. E. Carey, Nambour—

In response to your inquiries *re* growing and baling of broom millet:—Quantities of hurl are marketed in Brisbane done up in neat bundles unbaled. Although baling adds to the appearance, this difficulty can be got over by using a home-made press. A lucerne or other hay press can be used, the main object of baling being to reduce the bulk and consequently the freight charge. The most important factor in preparing broom millet for market is the classification and grading of the fibre. Under separate cover we send you the Departmental pamphlet on the subject.

GRADING COTTON.

Cotton.—Chinchilla.

With the present methods of buying cotton, especially the short staple varieties (¾ in. to $1\frac{1}{16}$ in.), other things being equal, the grade practically determines the price that is received by the producer. What is known as staple cotton (1⅛ in. staple or above) is usually sold on sample. The sample gives each party to the trade a chance to form his own opinion, and is necesary because cotton dealers and spinners have such different ideas about the character and length of staple.

Low Middling, Middling, and Good Middling cover the bulk of white cotton grown in an average season, and a knowledge of these three grades is usually sufficient for the grower's use.

Middling, as the name shows, is the middle or basic grade, and is the grade upon which the market quotations are based. All grades above Middling bring a higher price and all below Middling bring a lower price than that quoted for Middling, the amount above or below varying according to the respective differences in use where the cotton is marketed.

Many more grade names are used by the trade in the large spot markets to describe the different classes of coloured cottons. The grades of white cotton, however, are the foundation of all these other classes. When the cotton is not white, its nature is indicated by adding the words "off colour" or "fair colour," "spotted," "tinged," or "stained," as the case may be, to the grade given to the sample. In other words, there may be several classes of the same grade of cotton—*e.g.*, Middling "off colour," Middling "tinged," or Middling "stained."

The grade of a sample of cotton is determined by the quantity of leaf, dirt, sand, motes, neps,* gin-cut or stringy fibre, and cut seed it contains, together with its colour.

Cotton should be dry when ginned, and the saws, brushes, and other parts of the gin should be in good condition if a smooth sample is to be obtained.

Cleaners used in connection with the ginning will improve the cotton from one to two grades.

Early pickings should neither be mixed nor ginned with later pickings that are of a lower grade, since the price paid for a bale of cotton is based on the lowest grade it contains rather than on the highest grade.

Cotton should not be exposed to the weather; moisture causes it to mildew and so lowers the grade.

RE "MURIATE OF SODA."

R. T. G. Carey, Beerwah—

Mr. J. C. Brünnich, Agricultural Chemist, says:—Muriate of soda is common salt, and is only in some cases of benefit as manure, for a few crops like mangolds, cabbages, &c. If salt is applied in large amounts it will sterilise soil and retard growth of plants. It is used in quantities from 2 to 3 cwt. per acre as a top-dressing. It appears to have a slight action in rendering some potash in soil available to plant growth, and therefore its use may economise the necessary application of potash manures. Salt appears also to have a deterrent effect on slugs, cutworms, grubs, &c.

"Selector," Gradule—

Your letter of 9th October was submitted to Mr. H. C. Quodling, Agricultural Inspector, who replies to your questions as follows:—

1. Trees may be poisoned at any time of the year, preferably March and April. Trees should be poisoned at the same time as being rung.
2. The treatment used is one of the cheapest and most effective.
3. The arsenic has no after-effects on the land and grass.
4. The best time to ring green timber is when the sap is up.

* Neps look like small white dots, and are best seen when a thin layer of the cotton fibres is held toward the light.

The Markets.

PRICES OF FARM PRODUCE IN THE BRISBANE MARKETS FOR OCTOBER, 1914.

Article.		OCTOBER. Prices.
Bacon	lb.	8d. to 10½d.
Bran	ton	£7
Butter	cwt.	108s.
Chaff, Mixed	ton	£4 to £5 15s.
Chaff, Oaten (Victorian)	,,	£6 15s. to £7
Chaff, Lucerne	,,	£4 10s. to £7
Chaff, Wheaten	,,	£5 10s.
Cheese	lb.	6¾d. to 7d.
Flour	ton	£9 10s.
Hams	lb.	1s. 2d.
Hay, Oaten (Victorian)	ton	£7 to £7 10s.
Hay, Lucerne (Prime)	,,	...
Honey	lb.	2½d.
Maize	bush.	3s. 3d. to 3s. 3½d.
Oats	,,	3s. 11d. to 4s.
Onions	ton	£14
Peanuts	lb.	3d. to 3½d.
Pollard	ton	£6 to £7
Potatoes	,,	£12 to £14
Potatoes (Sweet)	cwt.	4s. to 4s. 3d.
Pumpkins	ton	£2 to £2 5s.
Wheat, Milling	bush.	3s. 4d.
Eggs	doz.	7d. to 8d.
Fowls	pair	4s. to 5s. 6d.
Geese	,,	...
Ducks, English	,,	3s. 9d. to 4s.
Ducks, Muscovy	,,	4s. 6d. to 5s. 6d.
Turkeys (Hens)	,,	8s. 6d. to 9s. 3d.
Turkeys (Gobblers)	,,	12s. to 20s.

SOUTHERN FRUIT MARKETS.

Article.	OCTOBER. Prices.
Bananas (Queensland), per case	14s. to 16s.
Bananas (Fiji), per case	19s. 6d. to 24s.
Mandarins (Queensland), per case	9s. to 14s.
Oranges (Navel), per case	8s. to 13s.
Oranges (Seville), per case	5s. to 6s.
Oranges (other), per case	8s. to 12s.
Passion Fruit, per half-case	2s. to 7s.
Pineapples (Queens), per case	7s. to 10s.
Pineapples (Ripleys), per case	7s. to 8s.
Pineapples (Common), per case	7s. to 8s.
Tomatoes, per quarter-case	4s. to 6s.

PRICES OF FRUIT—TURBOT STREET MARKETS.

Article.	OCTOBER. Prices.
Apples, Eating (Tasmanian), per case	8s. to 12s.
Apples (Cooking), per case	6s. to 7s.
Bananas (Cavendish), per dozen	3d. to 7d.
Bananas (Sugar), per dozen	2d. to 4d.
Cape Gooseberries, per quarter-case	5s. 6d. to 7s.
Citrons, per cwt.	10s. to 10s. 6d.
Cocoanuts, per sack	12s. to 14s.
Cumquats, per case	1s. 6d. to 2s. 3d.
Custard Apples, per quarter-case	2s. 6d. to 6s.
Lemons (Local), per case	6s. 6d. to 9s.
Lemons (Imported), per case	6s. to 10s.
Mandarins, per case	6s. to 10s.
Oranges (Navel), per case	5s. to 8s.
Oranges (other), per case	4s. to 7s.
Papaw Apples, per quarter-case	1s. to 1s. 6d.
Passion Fruit, per quarter-case	9s. to 10s.
Persimmons, per quarter-case	...
Peanuts, per pound	3½d.
Pears, per quarter-case	...
Pineapples (Ripley), per dozen	1s. 6d. to 4s. 6d.
Pineapples (Rough), per dozen	1s. to 1s. 6d.
Pineapples (Smooth), per dozen	1s. 6d. to 3s. 6d.
Rosellas, per sugar bag	...
Strawberries, per dozen pint boxes	4s. to 7s. 6d.
Strawberries, per tray	...
Tomatoes	3s. 6d. to 6s. 6d.

TOP PRICES, ENOGGERA YARDS, SEPTEMBER, 1914.

Animal.	SEPTEMBER. Prices.
Bullocks	£14 15s. to £17 17s. 6d.
Cows	£9 15s. to £13 2s. 6d.
Merino Wethers	25s.
Crossbred Wethers	22s 3d.
Merino Ewes	19s.
Crossbred Ewes	20s. 6d.
Lambs	20s. 3d.
Pigs (Porkers)	43s.

Statistics.

RAINFALL IN THE AGRICULTURAL DISTRICTS.

TABLE SHOWING THE AVERAGE RAINFALL FOR THE MONTH OF SEPTEMBER IN THE AGRICULTURAL DISTRICTS, TOGETHER WITH TOTAL RAINFALLS DURING SEPTEMBER, 1913 AND 1914, FOR COMPARISON.

Divisions and Stations.	Average Rainfall.		Total Rainfall.		Divisions and Stations.	Average Rainfall.		Total Rainfall.	
	Sept.	No. of Years' Records.	Sept., 1914.	Sept., 1913.		Sept.	No. of Years' Records.	Sept., 1914.	Sept., 1913.
North Coast.	In.		In.	In.	*South Coast*—continued:	In.		In.	In.
Atherton	0·46	13	2·15	Nil	Mount Larcom ...	...	...	..	...
Cairns	1·04	27	1·75	0·08	Nanango	1·96	27	0·15	2·98
Cardwell	1·32	27	0·73	0·04	Rockhampton ...	1·34	27	0·54	0·29
Cooktown	0·57	27	1·25	0·49	Woodford	2·14	27	0·82	2·81
Herberton	0·44	27	1·50	0·05	Yandina	2·14	21	1·23	2·79
Ingham	1·16	22	0·47	0·04					
Innisfail	3·03	27	8·75	0·04					
Mossman	0·79	5	1·85	0·32	*Darling Downs.*				
Townsville	1·30	30	Nil	Nil					
					Dalby	1·79	27	0·38	1·47
					Emu Vale	1·86	17	0·45	3·06
Central Coast.					Jimbour	1·75	24	Nil	1·62
					Miles	1·43	27	0·50	0·90
Ayr	1·90	27	0·04	0 02	Stanthorpe ...	2·23	27	1·04	1·75
Bowen	1·15	27	0·23	0·28	Toowoomba ...	2·13	27	0·41	1·41
Charters Towers ...	0·84	27	0·18	0·30	Warwick	1·98	27	0·34	2·25
Mackay	1·75	27	0·92	0·24					
Proserpine	2·21	11	3·60	0·25					
St. Lawrence ...	1·29	27	0·85	0·46	*Maranoa.*				
					Roma	1·49	25	0·31	0·75
South Coast.									
					State Farms, &c.				
Crohamhurst ...	2·10	20	2·26	3·98					
Biggenden	1·48	14	0·73	4·11					
Bundaberg	1·81	27	0·84	1·52	Gatton College ...	1·66	14	0·48	1·40
Brisbane	2·04	63	0·82	2·54	Gindie	0·95	13	Nil	0·38
Childers	1·95	19	1·31	2·44	Kamerunga Nurs'y	1·13	23	3·44	0·02
Esk	2·30	27	0·96	3·07	Kairi	...	...	1·86	...
Gayndah	1·63	27	0·78	3·44	Sugar Experiment Station, Mackay	1·63	16	1·68	0·19
Gympie	2·22	27	1·46	5·10					
Glasshouse M'tains	1·56	6	1·59	3·32	Bungeworgorai ...	...	...	0·58	0·81
Kilkivan	1·77	27	Nil	4.52	Warren	...	...	Nil	0·34
Maryborough ...	1·78	27	2·35	1·41	Hermitage ...	1·56	7	0·33	2·48

NOTE.—The averages have been compiled from official data during the periods indicated; but the totals for September this year and for the same period of 1913, having been compiled from telegraphic reports, are subject to revision.

Farm and Garden Notes for December.

Too much care can scarcely be bestowed upon potatoes dug up this month to protect them from the sun. They should be dug or ploughed out as soon as the skin is firm, as they are liable to rot in the ground owing to the great heat.

Field.—The wheat harvest will be now nearing completion, and to all appearance the results are not likely to constitute a record, owing to the dry spell of September, and the yield promises to be somewhat unsatisfactory to the wheat-growers. The principal factor operating against a still greater extension of the wheat-growing industry is, that many farmers who formerly grew wheat and barley have turned their attention to dairying, which offers larger and quicker returns.

The dry weather which prevailed during parts of the month of September gave rise to grave fears for the harvest, but the subsequent timely rainfall came just in time to save the crop. The estimates of the probable yield have varied so considerably that it will be well to wait until the harvest is over before calculating on the result.

Given favourable weather, maize, panicum, imphee, Kafir corn, and sorghum may be sown. Arrowroot, ginger, and sweet potatoes may be sown.

Kitchen Garden.—Gather cucumbers, melons, vegetable marrows, and French beans as soon as they are fit for use. Even if they are not required, still they should be gathered, otherwise the plants will leave off bearing. Seeds of all these may be sown for a succession. Sow cabbage and cauliflower seed. Great difficulty will be experienced in getting these to grow at this season, and the plants will consequently be more valuable in proportion. Tomatoes should be in full bearing, and the plants should be securely trained on trellises or stakes. Take up onions, and spread them out thinly on the barn floor until the tops wither sufficiently to pull off easily. They should then be graded into sizes, and sent to market or stored in a cool place. Where there is an unlimited supply of water, and where shade can be provided, lettuce and other salad plants may still be sown. All vacant ground should be well manured and dug two spits deep. Manure and dig as the crops come off, and the land will be ready for use after the first shower.

Flower Garden.—Keep the surface of the land well stirred. Do not always stir to the same depth, otherwise you are liable to form a "hard pan," or caked surface, beneath the loose soil. Alternate light with deep hoeings. A few annuals may still be planted, such as balsams, calendulas, cosmos, coreopsis, marigold, nasturtium, portulaca, zinnia, and cockscomb. Plant out whatever amaranthus may be ready. These may still be sown in boxes. Clear away all annuals which have done

flowering. Bulbs should have all the dead leaves cut away, but the green leaves should not be touched. Stake chrysanthemums, and, as the flower buds develop, give them weak liquid manure. Coleus may now be planted and propagated from cuttings. Dahlias are in various stages, but the greater part will have been planted by this time. Give them liquid manure, and never let them dry up. Lift narcissus about the end of the year, but do not store them. Plant them out at once in their new positions. Top-dress all lawns.

Orchard Notes for December.

THE SOUTHERN COAST DISTRICTS.

December is somewhat an off month for pines, though bananas should be improving both in quality and quantity. The purely tropical summer ripening fruits are not yet ready, and, consequently, there is only a limited supply of fruit in this part of Queensland during the month.

Early ripening varieties of grapes will mature, and care should be taken to market them in good order. The first fruit to ripen should be put up in small packages, as, if marketed in this manner, it will fetch a better price, but as it becomes more plentiful it can be packed in larger cases.

Pay particular attention during the month to all peaches, apples, pears, Japanese plums, or other fruits that are liable to be attacked by fruit fly, and see that no fly-infested fruits are allowed to lie about under the trees, and thus breed out a great crop of flies that will be ready to destroy the grape and mango crops as they mature.

If the month is dry see that the orchard is kept well worked so as to retain moisture in the soil, and, in any case, even should there be a good rainfall, it is necessary to cultivate in order to keep down weed growth, as if weeds are not kept in check now there is little chance of their being kept in hand once the January and February rains set in.

The planting out of pineapples, bananas, and most kind of tropical fruits can be carried out during the month, especially if there is any rainy weather; but, if the weather is dry, it is better to defer the planting out of tropical fruits till January or February.

The cyaniding of citrus trees can be continued when necessary, and where Maori or orange mite is showing it should be checked at once, as Maori fruit is of no use for the Southern markets, and is unsuitable for export to the old country.

THE TROPICAL COAST DISTRICTS.

Clean up all orchards and pineapple and banana plantations as long as you have the chance of fine weather, so as to have your land in good order when the wet season commences, as once the rain sets in there is little chance of fighting weeds. Watch bananas carefully for fly, and market the fruit in good order. Handle the crop of pines carefully; don't let the fruit get too ripe, as an over-ripe Northern pine is tasteless. The fruit should be cut as soon as it is fully grown, as even when quite green the rough-leaf varieties have usually developed sufficient sugar to suit most persons' taste. Pack carefully to prevent bruising, and they will carry South in good order.

Only send high-class mangoes South—bad-flavoured sorts, and stringy, carroty, or turpentine flavoured varieties are not worth shipping. High-class fruit will pay to handle carefully, but there is no demand for rubbish, and I am sorry to say that fully 90 per cent. of the mangoes grown in the State must be classed under the latter heading.

Tropical fruits of all kinds can be set out during suitable weather. Fruit pests of all sorts must be systematically fought.

THE SOUTHERN AND CENTRAL TABLELANDS.

December is a busy month for the growers in the Stanthorpe district. Early apples, plums, peaches, nectarines, &c., will ripen during the month, and must be marketed as soon as ripe, as they do not keep long once they are gathered. Handle carefully, and grade better; there is far too much early rubbish slumped on to the local markets, which tends to spoil the demand as well as the price. Watch the orchards very carefully for Codling moth and fruit fly, and take every possible precaution to keep these pests in check should they make their appearance, as the future cleanliness of the orchard depends very largely on the care that is taken now to keep these pests in check.

If the month is dry, keep the orchard and vineyard well cultivated. Watch the vines carefully so as to detect the first signs of Oidium or Anthracnose, and systematically fight these pests, remembering always that in their case prevention is better than cure, and that only prompt action is of the slightest value.

On the Darling Downs every care must be taken to keep the fruit fly in check, and on no account must infested fruit be allowed to lie about under the trees, as this is far and away the best method of propagating the pest wholesale.

In the Central District the grape crop will ripen during the month. Handle the fruit carefully. Cut it when dry, and where it has to be sent long distances to market pack in 6-lb. baskets rather than in larger cases. Where dry keep the orchard and vineyard well cultivated, and where the citrus and other fruit trees require it give them an irrigation. Don't irrigate grape once the seeds have been formed, as it tends to deteriorate the quality, and to make the fruit tender and consequently to carry badly.